

## Generalized Scope Economy

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### 1. Introduction

- A long-standing puzzle: A-not-A licensing of sentence-initial *root* modals (SIMs)

Chinese root modals are generally disallowed in sentence-initial positions (i.e. they follow the subject), as in (1) (taken from T.-H. J. Lin 2011:69).

- (1) \***neng** / \***hui** / \***keyi**    Zhangsan    zhunbei    wancan  
      can    will    can    Zhangsan    prepare    dinner  
      Int.: ‘Zhangsan can/ will/ may prepare the dinner.’

However, it has been observed that root modals like *neng* ‘can’, *hui* ‘will’, *keyi* ‘can/may’ or *yinggai* ‘should’ (in deontic use), if they are in A-not-A form, can appear sentence-initially (J.-W. Lin & Tang 1995, Huang, Li & Li 2009), as in (2) (taken from T.-H. J. Lin 2011:69):

- (2) **neng-bu-neng** / **hui-bu-hui** / **ke-bu-keyi**    Zhangsan    zhunbei    wancan?  
      can-NEG-can    will-NEG-will    can-NEG-can    Zhangsan    prepare    dinner  
      ‘Can/ will/ may Zhangsan prepare the dinner?’

- New observation: A-not-A questions do not always license SIMs
- The role of focus: <sup>OK</sup>subject focus vs. \*object focus

### (3) A-not-A questions

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

- a. Ke-bu-keyi    Zhangsan<sub>F</sub>    qu    Beijing?  
      can-NEG-can    Zhangsan    go    Beijing  
      ‘May Zhangsan go to Beijing?’

- b. \*Ke-bu-keyi    Lisi    **qu**    Taibei<sub>F</sub>?  
      can-NEG-can    Lisi    go    Taipei  
      Int.: ‘May Lisi go to Taipei?’

This paper argues for three claims:

- First, we show that sentence-initial *root* modals (SIMs) are indeed a more general phenomenon which interacts with **focus**.
- Second, we analyze SIMs as (root) modal **movement** which is made licit by crossing a focused element. To be specific, we propose that SIMs are not licensed by the A-not-A form *per se*, but the (subject) focus triggered by A-not-A questions.
- Third, we formulate an economy condition to capture the semantic effects brought by the SIM movement, which is in lines of Fox’s (2000) **Scope Economy (SE)**.
- The implication: Focus may conflate with quantifiers as quantificational elements, motivating a **generalized** version of Scope Economy.

The roadmap:

- Section 2 generalizes focus as the licensing condition of SIMs.
- Section 3 proposes a movement account for SIMs.
- Section 4 formulates a generalized version of Scope Economy.
- Section 5 concludes.

## 2. Sentence-initial root modals and focus

### 2.1. The licensing conditions of SIMs

- Modals: epistemic-root distinction
- Manifested as a difference in syntactic positions in Chinese (T.-H. J. Lin 2011, Tsai 2015)

#### (4) Root modals may not precede the subject

(\***keyi**) Zhangsan (**keyi**) zhunbei wancan  
can Zhangsan can prepare dinner  
'Zhangsan may prepare the dinner.'

#### (5) Epistemic modals may precede the subject

(**keneng**) Zhangsan (**keneng**) zhunbei-le wancan (T.-H. J. Lin 2011:50-51)  
be.possible Zhangsan be.possible prepare-PERF dinner  
'Zhangsan is possible to have prepared the dinner.'

- Exceptional sentence-initial position for root modals in three contexts: #1 Contrastive contexts, #2 *Wh*-questions & #3 Polarity questions

- #1 Contrastive contexts

- *Shi*-focus construction (J.-W. Lin & Tang 1995:62, ft7)

- An asymmetry: *shi* must be associated with the subject. Association with the VP or object would yield deviation of the sentence.

#### (6) *Shi*-focus construction (subject)

Keyi shi **Zhangsan**<sub>F</sub> qu Beijing  
can FOC Zhangsan go Beijing  
'It can be the case that it is Zhangsan who goes to Beijing.'

#### (7) *Shi*-focus construction (VP/ object)

\*Keyi Zhangsan shi [**qu Beijing**]<sub>F</sub>  
can Zhangsan FOC go Beijing  
Int.: 'It can be the case that Zhangsan go to Beijing (but not do something else).'

- Contrastive continuation
- The same asymmetry: the sentence is allowed iff the focus immediately follows the SIM.

#### (8) Contrastive continuation (subjects)

Keyi **ni**<sub>F</sub> qu, ye keji **ta**<sub>F</sub> qu  
can 2SG go also can 3SG go  
'It can be the case that you go or it also can be the case that he goes.'

(9) Contrastive continuation (verbs)

\*Keyi ni liuxia<sub>F</sub>, ye keyi ni zou<sub>F</sub>  
can 2SG stay also can 2SG leave

Int.: 'It can be the case that you stay or it also can be the case that you leave.'

- #2 Wh-questions
- Similar subject-object asymmetry

(10) Wh-subject

(Name,) keyi [shei]<sub>F</sub> mianfei qu Beijing?  
so can who free.of.charge go Beijing  
'Who may go to Beijing for free?'

(11) Wh-object

\* (Name,) keyi Zhangsan mianfei qu [nali]<sub>F</sub>?  
so can Zhangsan free.of.charge go where  
Int.: 'Where may Zhangsan go for free?'

- *Wh*-phrases bear inherent focus interpretation (Brody 1990) and may thus form a natural class with the contrastive focus above.
- #3 Polarity questions
- Question intonation or particles

(12) Polarity question

Keyi Zhangsan qu Beijing {↗/ ma}? (↗ = rising question intonation)  
can Zhangsan go Beijing Q SFP.Q  
'May Zhangsan go to Beijing?'

- If SIMs are licensed by the intonation or particles *per se*, they should not be sensitive to focus position.
- (13) suggests the otherwise:

(13) Keyi (shi) Zhangsan (\*shi) qu Beijing {↗/ ma}?

can FOC Zhangsan FOC go Beijing Q SFP.Q

a. 'Can it be the case that Zhangsan but not someone else go to Beijing?'

b. \*'Can it be the case that Zhangsan go to Beijing but not do something else?'

- Thus, the intonation or particles are not the true licenser, but the focus triggered by the intonation or particles.

Building on the distribution of focus in (#1) contrastive contexts, (#2) *wh*-questions and (#3) polarity questions, we generalize the licensing condition of SIMs as (14):

(14) SIMs are licensed if the element immediately following them receives focus interpretation.

2.2. *A-not-A questions and narrow focus*

- The same line of reasoning applies to A-not-A questions
- The A-not-A form per se does not *always* license SIMs
- Only the subject focus in (a) may license the SIM

(15) A-not-A questions

Lisi's Mainland Travel Permit had expired, so that he cannot go to Beijing...

a. Ke-bu-keyi **Zhangsan<sub>F</sub>** qu Beijing?

can-NEG-can Zhangsan go Beijing

'May Zhangsan go to Beijing?'

b. \*Ke-bu-keyi Lisi **qu Taipei<sub>F</sub>**?

can-NEG-can Lisi go Taipei

Int.: 'May Lisi go to Taipei?'

- Problem: why an A-not-A question could trigger focus?
- A plain A-not-A question formed by verbs (V-not-V) is a non-biased (neutral) question (i.e. the speakers presumes no polarity on the answer)

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

Zhangsan qu-bu-qu Beijing?

Zhangsan go-NEG-go Beijing

'Does Zhangsan go to Beijing?'

- Answer: there are two types of A-not-A questions (Schaffar & Chen 2001, Tsai & Yang 2015)
- 1. Inner A-not-A: often formed by verbs and contribute to a neutral/broad focus interpretation, e.g. (16) above
- 2. Outer A-not-A: often formed by copular *shi* (or epistemic modals) and contribute to a narrow focus interpretation, e.g. (17) below:

(17) a. [Context: The speaker knows that Zhangsan likes Beijing but not Taipei:]

Zhangsan shi-bu-shi qu **Beijing<sub>F</sub>**? (object focus)

Zhangsan be-NEG-be go Beijing

'Does Zhangsan go to Beijing (but not somewhere else)?'

b. [Context: The speaker knows that only Zhangsan likes Beijing:]

shi-bu-shi **Zhangsan<sub>F</sub>** qu Beijing? (subject focus)

be-NEG-be Zhangsan go Beijing

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

- The head of inner A-not-A: located within the TP domain
- The head of outer A-not-A: located in the CP domain
- We suggest that A-not-A questions formed by SIMs (= (2) & (15)) are outer A-not-A questions carrying a higher functional head in CP domain. The outer A-not-A head is responsible for the narrow focus interpretation.

### 3. Towards a movement approach

#### 3.1. Proposal

- Root modals (e.g. *keyi* ‘can/may’, deontic *yinggai* ‘should’) are base-generated below Spec TP (Tsai 2015);
- SIMs can undergo movement, only when it crosses a focus

#### (18) SIM movement (preliminary version)

[Mod<sup>root</sup> [<sub>TP</sub> XP<sub>[Focus]</sub> [ \_\_\_ [<sub>VP</sub> ... ]]]

- This movement is not allowed if the elements immediately following the root modal do not receive a focus interpretation, hence capturing the generalization in (14).
- Deriving the initial contrast in (1) and (2) (reproduced below):

(19) \***neng** / \***hui** / \***keyi** Zhangsan zhunbei wancan  
 can will can Zhangsan prepare dinner  
 Int.: ‘Zhangsan can/ will/ may prepare the dinner.’

(20) **neng-bu-neng** / **hui-bu-hui** / **ke-bu-keyi** Zhangsan<sub>F</sub> zhunbei wancan?  
 can-NEG-can will-NEG-will can-NEG-can Zhangsan prepare dinner  
 ‘Can/ will/ may Zhangsan prepare the dinner?’

- (19): plain declarative clause, no subject focus, and hence no SIM movement:

(21) \* [**keyi** [<sub>TP</sub> Zhangsan<sub>[-Focus]</sub> [ \_\_\_ [<sub>VP</sub> prepare dinner ]]]

- (20): outer A-not-A questions, subject narrow focus triggered by a higher functional head in the CP domain, and hence licensing SIM movement:

(22) [A-not-A [**keyi** [<sub>TP</sub> Zhangsan<sub>[Focus]</sub> [ \_\_\_ [<sub>VP</sub> prepare dinner ]]]]

- *Keyi* may or may not attach to the A-not-A head to form *ke-bu-keyi*. SIMs are licensed even *keyi* is not in A-not-A form, which again supports that focus instead of A-not-A form is the true licenser.

(23) [Shi-bu-shi [ **keyi** Zhangsan<sub>[Focus]</sub> \_ [zhunbei wancan]]] ?  
 be-NEG-be can Zhangsan prepare dinner  
 ‘Is it the case that it is Zhangsan that may prepare dinner?’

- Caution: The proposed movement is not a focus-triggering operation, rather, it is licensed by crossing a focus.
- Should be carefully distinguished with clefting/other focus movement (e.g. *lian*-focus and object shift in Mandarin), which may involve movement of the focused element itself.

- Prediction on object focus movement:
- While an in-situ focused object cannot license an SIM, an object undergone focus movement is predicted to be legitimate as a licenser if it is immediately following the SIM.

(24) Object focus movement with SIMs

- a. (Jingran) keyi **lian GB** na-ge-laoshi dou bu-jiao, zhenlipu!  
unexpectedly can FOC GB that-CL-teacher DOU NEG-teach really unacceptable  
'How could that teacher not teach GB (Government & Binding theory)! That's insane!'
- b. \* (Jingran) keyi na-ge-laoshi **lian GB** dou bu-jiao, zhenlipu!  
unexpectedly can that-CL-teacher FOC GB DOU NEG-teach really unacceptable
- c. \* (Jingran) **lian GB** keyi na-ge-laoshi dou bu-jiao, zhenlipu!  
unexpectedly FOC GB can that-CL-teacher DOU NEG-teach really unacceptable

3.2. *Variable landing sites*

- The landing site of SIMs is variable.
- Topic > SIM > SpecTP

(25) SIMs follow the topic

- a. [Zhe-jian-dangao]<sub>t</sub>, Zhangsan<sub>F</sub> **yinggai** chi t (, bu shi ni<sub>F</sub>)  
this-CL-cake Zhangsan should eat NEG be 2SG
- b. [Zhe-jian-dangao]<sub>t</sub>, **yinggai** Zhangsan<sub>F</sub> chi t (, bu shi ni<sub>F</sub>) (SIM)  
this-CL-cake should Zhangsan eat NEG be 2SG
- (a)-(b): 'This cake, it is Zhangsan that should eat (but not you).'

- SIM > Topic > SpecTP

(26) SIMs precede the topic

- a. (Name,) [na-ge-pinpai]<sub>F</sub><sub>t</sub> women **yinggai** yao yongyuan bu mai t ?  
so which-CL-brand 1PL should should ever NEG buy
- b. (Name,) **yinggai** [na-ge-pinpai]<sub>F</sub><sub>t</sub> women yao yongyuan bu mai t ? (SIM)  
so should which-CL-brand 1PL should ever NEG buy
- (a)-(b): '(So,) which brand should we never buy?'

- Epistemic modals > SIM (> Topic) > SpecTP

(27) SIMs follow epistemic modals

- a. Keneng keyi ni<sub>F</sub> qu (, bu-yiding yao ta qu)  
be.possible can 2SG go NEG-must should 3SG go  
'It is possible that it is you (but not necessarily he) that may go.'
- b. \*Keyi keneng ni<sub>F</sub> qu (, bu-yiding yao ta qu)  
can be.possible 2SG go NEG-must should 3SG go
- c. \*Keyi ni<sub>F</sub> keneng qu (, bu-yiding yao ta qu)  
can 2SG be.possible go NEG-must should 3SG go

### 3.3. Alternatives

- Base-generation approach
- Alternative #1 SIMs as epistemic uses (modals) (T.-H. J. Lin 2011)
- Potential problem 1: focus distribution
- Genuine epistemic modals like *keneng* ‘be.possible’ impose no restriction on the focus distribution. It is thus unclear that why SIMs have to be licensed by a focus immediately following them if they are epistemic modals.

(28) Keneng ta shi qu-le **Beijing<sub>F</sub>**, bu shi **Taipei<sub>F</sub>**  
be.possible 3SG FOC go-PERF Beijing NEG FOC Taipei  
‘It is possible that he went to Beijing instead of Taipei.’

- Potential problem 2: modal interpretation
- *Yinggai* ‘should’: has both epistemic and deontic uses
- wrongly predicted to be disambiguated at sentence-initial position

(29) a. **Yinggai<sup>Epistemic</sup>** Zhangsan bu lai (, ta shengbing le)  
should Zhangsan NEG come 3SG be.sick SFP  
‘It should be the case that Zhangsan will not come. (He is sick.)’  
b. **Yinggai<sup>Deontic</sup>** Zhangsan bu lai (, bu yinggai ni bu lai)  
should Zhangsan NEG come NEG should 2SG NEG come  
‘It is Zhangsan that should not come (but not you).’ (a)≠(b)

- Alternative #2 SIMs as *verum focus operators* base-generated in the CP domain (Hsu 2016)
- Hsu’s major argument: intervention effect displayed by *wh*-phrases:  
\*Q-operator ... SIM ... *wh*-object

(30) \*Yinggai Zhangsan mai **shenme<sub>F</sub>** ne? (Hsu 2016:263)  
Should Zhangsan buy what SFP.Q  
Int.: ‘What should Zhangsan buy?’

- Problem: wrongly predicts SIMs with *wh*-subjects to be ungrammatical.

(31) Yinggai **shei<sub>F</sub>** qu?  
should who go  
‘Who should go?’

- Under our movement analysis, (30) is disallowed since *Zhangsan* is not (and cannot be, in this case,) focused, while (31) is allowed since *wh*-phrases bear inherent focus. The subject-object asymmetry is a natural consequence of our proposal.

#### 4. Generalized Scope Economy

##### 4.1. Alternation of focus scope with modals

- Movement of an SIM across a *focused* element has semantic effects.

(32) #Shi **shangdi**<sub>F</sub> keyi zhengjiu ni, suiran wo bu xin shangdicunzai  
 FOC God can help 2SG although 1SG NEG believe God exist  
 Int.: ‘God (but not someone else) may help you, though I don’t believe God is here.’

(33) Keyishi **shangdi**<sub>F</sub> zhengjiu ni, suiran wo bu xin shangdicunzai  
 can FOC God help 2SG although 1SG NEG believe God exist  
 ‘God (but not someone else) may help you, though I don’t believe God is here.’

- Before SIM movement: (32) presupposes the existence of the focused subject ‘God’ and is infelicitous with a contradicting continuation
- After SIM movement: this presupposition is removed (= (33))
- Adopting a quantificational analysis of focus (Chomsky 1976, Larson & Lefebvre 1991), focus contains an existential quantifier and the presuppositional difference could be explained by the alternation of scopal relation between the existential quantifier and the root modal.

##### 4.2. Scope Economy

- We argue that SIM movement is regulated by an economy condition as (34).

(34) A preliminary economy condition on SIM movement (to be integrated)

[ X ... [ ... Y ... [ ... <X> ... ] ] ],  


where X is a root modal and Y is an element that is able to interact with X in scope for licit X-movement.

- The condition requires SIM movement to have semantic effects, manifested as scopal interaction between focus and modals.
- (34) explains why both (i) sentences with SIMs need a focus, (ii) the position of the focus must be on the movement path of SIMs.
- As scope-bearing elements, quantifiers may also have scopal interaction with modals, quantifiers over possible worlds (Kratzer 1991). An immediate prediction will be that quantifiers should license SIMs as well.
- This prediction is borne out: Root modals can only move across a quantificational element ((35)’s restrictive quantifier) but not a non-quantificational one ((36)’s definite expression).

(35) a. Zhiyou xuesheng keyi lai (only>can / \*can>only)  
 only students can come

‘Only students may come.’ (i.e. non-students cannot come.)

b. Keyi zhiyou xuesheng lai, (ye keyi zhiyou laoshi lai) (\*only>can / can>only)  
 can only students come also can only teacher come

‘It can be the case that only students come (, or that only teachers come).’

(i.e. non-students may also come) ≠ (a)

- (36) a. Na-ge-xuesheng **keyi** lai  
that-CL-student can come  
'That student may come.'
- b. \***Keyi** na-ge-xuesheng lai (without subject focus)  
can that-CL-student come

- The movement alters the scope relation between the restrictive quantifier and the root modal and results in different truth conditions in (35), while no such scopal alternation is possible in (36).
- Note that the condition in (34) is in lines with Fox's (2000) **Scope Economy**.
- SE dictates that scope-shifting operation must have semantic effects, i.e. inverse scope and surface scope are semantically distinct (e.g. different in truth conditions).
- SE is also attested in Cantonese (see Lee 2019 for aspectual verb *hoici* 'begin')
- However, the original formulation of SE in Fox (2000) has said little on the role of focus.
- Focus involves alternative sets and should be regarded as quantificational.
- With evidence from SIMs, we integrate (34) with SE in (37):

(37) Generalized Scope Economy (GSE)

[ X ... [ ... Y<sub>[Quantificational (including focus)]</sub> ... [ ... <X> ... ] ]],

↑  
where X is a scope-bearing element and Y is a *quantificational* (including *focus*) element and X and Y are scopally informative/ uncommutative for licit X-movement.

Our proposal for SIM movement could thus be refined as (38) to accommodate quantificational elements (e.g. restrictive quantifiers) beside focus and incorporate GSE:

(38) SIM movement (*final version*)

[Mod<sup>root</sup> [TP/TopicP XP<sub>[Quantificational/ Focus]</sub> ... [ \_\_\_ [VP ... ]]] (regulated by GSE),

↑  
where the movement must have semantic effects.

## 5. Concluding remarks

[Repeated from Section 1]

This paper argues for three claims:

- First, we show that sentence-initial *root* modals (SIMs) are indeed a more general phenomenon which interacts with **focus**.
- Second, we analyze SIMs as (root) modal **movement** which is made licit by crossing a focused element. To be specific, we propose that SIMs are not licensed by the A-not-A form *per se*, but the (subject) focus triggered by A-not-A questions.
- Third, we formulate an economy condition to capture the semantic effects brought by the SIM movement, which is in lines of Fox's (2000) **Scope Economy** (SE).
- The implication: Focus may conflate with quantifiers as quantificational elements, motivating a **generalized** version of Scope Economy.

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