ORDERING OF MODAL AUXILIARIES AND NON-AUXILIARIES IN MANDARIN

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Outline

Background
  - Multiple modality
  - Two puzzles

Mandarin modal elements
  - Modal non-auxiliaries
  - Modal auxiliary verbs

Double modal auxiliary construction (DMAC) in Mandarin
  - Identification of DMAC
  - A semantic account of modal auxiliaries ordering

Conclusion
Multiple modality

Sentences with multiple expressions of modality can be found across languages and in a variety of forms.

**Double modality in English:**

(1)  
- a. I certainly can believe that she has run out of gas.  
- b. It is certainly possible that she has run out of gas.  
- c. Her running out of gas certainly is a possibility.

(2)  
- a. It must be possible to run out of gas.  
- b. Running out of gas must be a possibility.

(3)  
- a. Running out of gas is a necessary possibility.  
- b. Running out of gas is a possible necessity.
Multiple modality

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Double modality in English:

(1)  a. I certainly can believe that she has run out of gas. ADV-AUX
    b. It is certainly possible that she has run out of gas. ADV-AP
    c. Her running out of gas certainly is a possibility. ADV-N

(2)  a. It must be possible to run out of gas. AUX-AP
    b. Running out of gas must be a possibility. AUX-N

(3)  a. Running out of gas is a necessary possibility. AP-N
    b. Running out of gas is a possible necessity. AP-N
Multiple modality

Sentences with multiple expressions of modality can be found across languages and in a variety of forms.

### Double modality in English:

**Double modality in English:**

1. **a.** I *certainly can* believe that she has run out of gas. [ADV-AUX]
   **b.** It is *certainly possible* that she has run out of gas. [ADV-AP]
   **c.** Her running out of gas *certainly* is a *possibility*. [ADV-N]

2. **a.** It *must* be *possible* to run out of gas. [AUX-AP]
   **b.** Running out of gas *must* be a *possibility*. [AUX-N]

3. **a.** Running out of gas is a *necessary possibility*. [AP-N]
   **b.** Running out of gas is a *possible necessity*. [AP-N]
Multiple modality

- Sentences with multiple expressions of modality can be found across languages and in a variety of forms.

Double modality in English:

(1)  a. I **certainly** can believe that she has run out of gas.  ADV-AUX
    b. It is **certainly possible** that she has run out of gas.  ADV-AP
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(2)  a. It **must** be **possible** to run out of gas.  AUX-AP
    b. Running out of gas **must** be a **possibility**.  AUX-N

(3)  a. Running out of gas is a **necessary possibility**.  AP-N
    b. Running out of gas is a **possible necessity**.  AP-N
Multiple modality

Modal meanings (Von Fintel, 2006)

- **Epistemic modality** concerns what is possible or necessary given what is known and what the available evidence is, e.g. *It must be raining outside.*

- **Deontic modality** (root modality) concerns what is possible, necessary, permissible, or obligatory, given a body of law or a set of moral principles or the like. e.g. *You must go to court on May 6th, 2016.*

 Certain nonstandard dialects of American English allow double modal auxiliary verbs (Labov, 1972):

**Double modal auxiliaries in English:**

(4) a. John *might could* eat before he goes to swim.
   b. We *should oughta* invite my cousin to the wedding.
   c. I *might should* finish that before I leave.
**Modal meanings (Von Fintel, 2006)**

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Modal **auxs** are usually analyzed as T(ense), a category assumed to be non-recursive (Jenkins, 1972; Battistella, 1991; Butler, 2003). Fitting two auxs under a single T becomes a puzzle:

```
<table>
<thead>
<tr>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
</tr>
<tr>
<td>???</td>
</tr>
</tbody>
</table>

might could | have dinner
```
TWO PUZZLES

Another puzzle is the restriction on sequences of modal AUX verbs. Epistemic modals typically must precede root modals, but sequences of non-AUX modals do not show this restriction:

**EPISTEMIC » ROOT**

(5)  
a. John *might should* eat before he goes to swim.  
b. *John *should might* eat before he goes to swim.

**ROOT » EPISTEMIC**

(6)  
a. Expandability is a **required possibility** in these products.  
b. It *must be possible* to win the game (otherwise the game is not properly designed).
In this talk, I:

1. Review Mandarin double modal constructions and confirm the existence of double modal auxiliary construction.

2. Argue that the ordering restriction on modal auxiliaries is a consequence of their syntactic positions, determined by the variables that bind them.

3. Suggest that modal elements’ quantificational independence status depends on their grammatical categories, split by whether or not the modal is an auxiliary verb.
In this talk, I:

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Why distinguish Mandarin modal elements?

- Mandarin’s lack of inflectional morphology complicates assessment of grammatical categories. *Keneng* could be AUX, AP or ADV.

(7) Zhangsan *keneng* qu chaoshi le.
Zhangsan may/possible/possibly go supermarket ASP

Zhangsan may have gone to the supermarket. AUX
It is possible that Zhangsan has gone to the supermarket. AP
Zhangsan has possibly gone to the supermarket. ADV

- Correct category identification is crucial for Mandarin. Modal AUX sequences raise serious syntactic questions for structure; modal ADV-AUX & AUX-AP sequences do not.

- Similarly for ordering. If double modal sequence is ADV-AUX and since ADVs are adjuncts, we expect freedom of ordering.
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  - Zhangsan may have gone to the supermarket. **AUX**
  - It is possible that Zhangsan has gone to the supermarket. **AP**
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Modal Ns

(8)  a. Occur after you
Zhangsan you biyao qu chaoshi le.
Zhangsan has necessity go supermarket ASP
Zhangsan has possibly gone to the supermarket.

b. Modified by attributive adjectives
Hen da de keneng shi Zhangsan milu le.
very big DE possibility be Zhangsan lost ASP
A very big possibility is that Zhangsan is lost.
Mandarin modal ns, aps, advs, auxs

- Modal ns

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Modal APs, compared with typical non-modal APs.

(9) a. Occur as an attributive modifier of N
   Kexing/Qiaomiao de fangan shi xian xiu tielu. plausible/clever DE program be first build railway
   The program which is plausible/clever is to build railway first.

   b. Occur as a main predicate
   Nage bu keneng/yinggai/biyao/jiandan. possible/highly-possible/necessary/easy.
   That is not possible/highly-possible/necessary/easy.
   That is not possible/possible/necessary/easy.

   c. Occur in A-not-A questions
   Zhege daan que bu queding/rong bu rongyi? this-CL answer sure not sure/easy not easy
   Is this answer sure/easy or not?

   d. Modified by a degree adverb hen ‘very’
   Zhangsan hen xianran/rongyi chidao (le).
   Zhangsan very obvious/easy late ASP
   It’s very obvious/easy that Zhangsan is late.
Modal **APS**, compared with typical non-modal **APS**s.

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- **Modal aps**, compared with typical non-modal aps.

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Mandarin modal elements

Modal **ADVs**, compared with typical non-modal **ADVs**.

(10)

a. **Occur in imperatives**

Yiding/Juedui/Mingtian bie qu yiyuan.
surely/absolutely/tomorrow not.IMP go hospital.
Surely/Absolutely/Tomorrow don’t go to the hospital.

b. **Occur sentence initially**

Yiding/Juedui/Mingtian ni xian zou.
surely/absolutely/tomorrow you first go
Surely/Absolutely/Tomorrow you go first.

c. **Do not form A-not-A questions**

*Zhangsan yi(ding) bu yiding/jue(dui) bu juedui shi laoshi?*
Zhangsan surely not surely/absolutely not absolutely be teacher
Intended: Is Zhangsan surely/absolutely a teacher or not?
Modal ADVs, compared with typical non-modal ADVs.

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Mandarin modal ns, aps, advs, auxs

- **Modal auxs.** Modal auxs behave differently from main verbs since they cannot take direct objects or an aspect marker.

(11) a. **Occur only with a main verb**
    
    Zhangsan *keneng* renshi Lisi.
    
    Zhangsan might know Lisi
    
    Zhangsan might know Lisi.

b. **Can form A-not-A questions**
    
    Ni *ying(gai)* bu *yinggai* qu ouzhou?
    
    you should not should go Europe
    
    Should you go to Europe or not?

c. **Can be negated by bu “not”**
    
    Zhangsan *bu* *yao* qu gongsi.
    
    Zhangsan not should go company
    
    Zhangsan is not required to go to the company.

d. **License ellipsis** (Ren, 2008)
    
    Zhangsan *bixu* likai Niuyue, Lisi ye *bixu*.
    
    Zhangsan must leave NY Lisi too must
    
    Zhangsan must leave NY, and Lisi must too.
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After applying the above tests, I conclude Mandarin has double modal auxiliary construction (DMAC).

(12)  Zhangsan keneng bu yinggai canjia jintian de huiyi.
Zhangsan might not should attend today’s meeting.

Syntactically, contrary to two modal auxiliaries located at the same T, I analyze T as recursive in this construction:
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Syntactically, contrary to two modal auxiliaries located at the same T, I analyze T as recursive in this construction:
A semantic account on ordering

1. (Kratzer, 1991): modals are lexically unspecified of flavors; modal auxiliaries are quantifiers over possible worlds.

2. (Hacquard, 2013a): modals are event-relative. A modal auxiliary’s modal base and ordering source are determined relative to an event $e$ it anchors to.

3. To be more specific, epistemic modals are bound by a left periphery speech act node; and root modals are bound by aspect.

\[
\begin{align*}
\left[\text{CP SA } \lambda e_0 \text{ Mod-} e_0 \left[TP T \left[AspP Asp \lambda e_1 \left[VP VP (e_1)\right]\right]\right]\right] & \quad \text{Epistemic} \\
\left[\text{CP SA } \lambda e_0 \left[TP T-e_0 \left[AspP Asp \lambda e_1 \text{ Mod-} e_1 \left[VP VP (e_1)\right]\right]\right]\right] & \quad \text{Root}
\end{align*}
\]

4. The Mandarin epistemic » root order naturally follows the syntactic positions in the same clause.
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\text{Epistemic} & : [\text{CP} SA \lambda e_0 \text{Mod-} e_0 [\text{TP} T \text{Asp} \lambda e_1 [\text{VP} \text{VP} (e_1)]]] \\
\text{Root} & : [\text{CP} SA \lambda e_0 [\text{TP} \text{T-} e_0 \text{Asp} \lambda e_1 \text{Mod-} e_1 [\text{VP} \text{VP} (e_1)]]]
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\text{Root} & : \quad \left[ \text{CP SA } \lambda e_0 \left[ TP \text{ T-}e_0 \left[ AspP \text{ Asp } \lambda e_1 \text{ Mod-}e_1 \left[ VP \text{ VP (}e_1\text{)}\right]\right]\right] \right]
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4. The Mandarin epistemic » root order naturally follows the syntactic positions in the same clause.
This analysis also predicts that polysemous modals (Hacquard, 2013a,b) have different interpretations with respect to their relative scopes. This prediction is confirmed by Mandarin.

Mandarin *yinggai* has two interpretations that are consistent with its positions:

(13)  

a. **Epistemic » T**  
Ta *yinggai* hui mai nabenshù.  
he must FUT buy that-CL book  
It’s very likely that he will buy the book.

b. **T » Root**  
Ta hui *yinggai* mai nabenshù.  
he FUT should buy that-CL book  
He will be required to buy the book.
Implications on Mandarin

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Non auxiliaries w/o ordering restriction

Similar to English, Mandarin also allows an *AUX* root modal preceding a non-*AUX* epistemic modal:

(14)  
Ni de youxi **bixu** you **keneng** baokuo xuniren.  
**AUX »N**  
you DE game must have possibility include avatars  
Your game must have the possibility to include avatars.

Proposal: While epistemic auxiliaries are interpreted relative to utterance event, epistemic *APS, NS*, etc. are interpreted relative to the domain of the events bound by *ASP*. Consequently the strict ordering does not occur.

This becomes clearer if we look at non-present tenses. In *It was possible that Mary was in the room*, we express compatibility of the prejacent (*Mary was in the room*) with some group’s knowledge in that past event, not the utterance event.
Non auxiliaries w/o ordering restriction

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In this work, I have:

- Analyzed Mandarin modals’ grammatical categories and categorized them into different parts of speech.
- Established the existence of double modal auxiliary construction in Mandarin.
- Provided a semantic account for the restricted ordering of epistemic auxiliary »root auxiliary.
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Thanks to:

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- Our advisee group at Stony Brook University: Paola Cépeda, So Young Lee, Lei Liu, Yaobin Liu and Robert Pasternak, for the many fun and helpful discussions.


Selected references II


