

Question markers: *Ba/ma/meiyou*

Mandarin *ba/ma/meiyou* signals yes-no questions:

- (1) Xia yu le *ba*? (2) Xia yu le *ma/meiyou*?
fall rain PRF BA fall rain PRF MA MEIYOU
'It rained, didn't it?' 'Did it rain?'

- (3) *Traditional view*
[... (*ba/ma/meiyou*)_{CP/IForceP}]

- (4) *Our split IForceP proposal*
[[... (*meiyou*)_{LowIForceP}] (*ma*)_{PerspP}] (*ba*)_{HighIForceP}]
(cf. Woods's *ForceP* < *IAP* and Dayal's *CP* < *PerspP* < *SAP*)

- **Non-co-occurrence** ← semantic mismatches.
- **Selectional restriction** ← a conspiracy of syntax and semantics.
- Our proposal can be extended to **all Mandarin question markers**.
- We show these from **embeddability paradigms**.

Traditional view: One head

CARTOGRAPHY

- *Ba, ma, and meiyou* never co-occur with each other.
- They are proposed to realize the same functional head.

- (5) *Paul 2014, 2015 (inspired by Zhu 1982)*
low < *force* < attitude complementizers

- (6) *Pan 2015, 2018, 2019, 2022*
SAspP < OnlyP < *IForceP* < SQP < LowAttP < HighAttP

EMBEDDABILITY ([±ROOT] À LA PAUL 2014)

Ba/ma never embeds, but *meiyou* can always embed (7).

- (7) [Zuotian xia yu le *meiyou*/**ba*/**ma*] hen guanjian.
Yesterday fall rain PRF MEIYOU BA MA very crucial
(Intended:) 'Whether it rained yesterday is very crucial.'

CHALLENGE FROM NEW DATA

Ma (but not *ba*) is embeddable after all, but only under certain predicates:

- (8) a. 'Want to know': ✓
John xiang zhidao [xia yu le *ma* zuotian]_↑.
John want know fall rain PRF MA yesterday
'John wants to know whether it rained yesterday.'
(Bhatt & Dayal 2020: 1122)
- b. 'Know': #
John zhidao [xia yu le *ma* zuotian]_↑.
John know fall rain PRF MA yesterday
Intended: 'John knows whether it rained yesterday.'

- The question in (8a) is not necessarily a quote (McCloskey 2006).
- An embedded 1SG pronoun can refer to the speaker.
- An embedded 3SG pronoun can refer to the matrix subject.

New proposal: Three projections

QUASI SUBORDINATION (DAYAL 2023)

- Relevant distinction for embedded *ma*: *quasi subordinator* (QS) vs. *non-quasi subordinator* (NQS) (≠ rogative vs. responsive).
- **Ignorance requirement (IR)**: A QS allows its subject (*x*) to not know the answer to its embedded question (*Q*).

	QS: ◇-know(<i>x</i> , <i>Q</i>)	NQS: □know(<i>x</i> , <i>Q</i>)
Rogative: [+Q]	<i>care about, want to know, wonder</i>	
Responsive: [±Q]	<i>forget</i>	<i>know, remember</i>

Table 1. Question embedding predicates of different types

OUR PROPOSAL: **HIGHFORCEP** > **PERSPP** > **LOWIFORCEP**

	HighIForceP <i>Ba</i>	PerspP <i>Bu</i> * <i>Ma</i>	LowIForceP <i>Meiyou</i> Op _{WH} A-not-A*
Noun complement	✗	✗ ✗	✓ ✓ ✓
Clausal subject	✗	✗ ✗	✓ ✓ ✓
Clausal object of an NQS	✗	✗ ✗	✓ ✓ ✓
Clausal object of a QS	✗	✓ ✓	✓ ✓ ✓

Table 2. Embeddability and proposed projection (X[±root]) of question markers
(* sentence-final particle or verb construction signaling yes-no questions)

Bu/ma as Mandarin Persp⁰

[[**Bu**]] = [λ*p*. λ*x*: **IR**. [λ*q*. *q* = *p* ∨ *q* = ¬*p*]] ≈ [[**Ma**]] = [λ*p*. λ*x*: **IR**. [λ*q*. *q* = *p*]]

Bu/ma embeds only when the **ignorance requirement** is met:

- (9) a. QS: wonder(*x*, *Q*) → ◇-know(*x*, *Q*) → ✓embedded *bu/ma*.
b. NQS: know(*x*, *Q*) → ¬◇-know(*x*, *Q*) → ✗embedded *bu/ma*.

EVIDENCE FOR SEMANTIC CONTRIBUTION (OR, WHY NOT LEXICAL)

- 'Want to know' vs. 'know': 'know' and *Q* form a constituent in both.
- Illocutionary force affects embeddability (10) (McCloskey 2006).

- (10) *Matrix interrogative*: ✓ (cf. *matrix declarative* (8b): #)
John zhi-bu-zhidao [xia yu le *ma* zuotian]_↑?
John know-not-know fall rain PRF MA yesterday
'Does John know whether it rained yesterday?'

EVIDENCE FOR SYNTACTIC SELECTION

- Noun complements (11) and clausal subjects do not embed *bu/ma*, even when the **ignorance requirement** is met.
- Our account: they are always **LowIForcePs**.

- (11) John hen guanxin [xia yu le *ma*]_↑ (*de wenti).
John very care.about fall rain PRF MA COMP question
'John cares about (the question of) whether it rained.'

Non-co-occurrence

SEMANTIC ACCOUNT

- We build on a Karttunen analysis:
question nucleus = proposition; question = set of propositions.
- Questions can be **singletons** (Bolinger 1979, Biezma & Rawlins 2012).
- Question markers do not co-occur with each other due to type clash.

	LowIForceP	PerspP	HighIForceP
<i>p</i> → <i>meiyou</i> → { <i>p</i> , ¬ <i>p</i> }		<i>p</i> → <i>bu</i> * → { <i>p</i> , ¬ <i>p</i> }	<i>p</i> → <i>ba</i> ** → <i>p</i>
<i>p</i> → A-not-A → { <i>p</i> , ¬ <i>p</i> }		<i>p</i> → <i>ma</i> * → { <i>p</i> }	

Table 3. Semantic input and output of question markers
(* modulo the ignorance requirement; ** à la Yuan 2021, Rudin 2022, Ye 2024)

EVIDENCE FOR THE SEMANTIC ACCOUNT

The distributions of 'yes' and *nandao* are naturally captured.

	<i>Meiyou</i> { <i>p</i> , ¬ <i>p</i> }	Op _{WH} { <i>φ</i> (<i>x</i> ₁), ..., <i>φ</i> (<i>x</i> _{<i>n</i>})}	A-not-A { <i>p</i> , ¬ <i>p</i> }	<i>Bu</i> { <i>p</i> , ¬ <i>p</i> }	<i>Ma</i> { <i>p</i> }	<i>Ba</i> <i>p</i>
'Yes' as a response	✗	✗	✗	✗	✓	✓
<i>Nandao</i>	✗	✗	✗	✗	✓	✗

Table 4. Distribution of 'yes' and *nandao*

- 'Yes' responds to singletons and propositions (cf. Krifka 2015).
- *Nandao* selects singletons and triggers a negative bias (12).

- (12) *Nandao* Zhangsan chi-le fan *ma*/**ba*/**bu*/**meiyou*?
NANDAO Zhangsan eat-PFV meal MA BA BU MEIYOU
(Intended:) 'Zhangsan didn't eat, right?' (Xu 2017: 13, adapted)

Concluding remarks

- Mandarin question markers show **three-layer tiered embeddability**.
- *Bu/ma* introduces an **ignorance requirement**.
- Mandarin question marker embeddability depends on the clause size (LowIForceP/PerspP: ✓; HighIForceP: ✗) and the Persp⁰ requirement.

ACKNOWLEDGEMENTS AND SELECTED REFERENCES

We thank Veneeta Dayal for advice; Shifan Chen, Yulin Du, Lingxiao Gao, Xi Huang, Changwei Liang, Jiamu Zhu & twelve anonymous survey participants for judgments; and Mirium Butt, Simon Charlow, Qiusi Chen, Magdalena Kaufmann, Richard Luo, Zoltán Szabó, Milena Šereikaitė, Jim Wood, Yūsuke Yagi, Ka-Fai Yip, Xuetong Yuan, Florence Zhang-Yukun & our audience at UConn Linguistics Graduate Roundtable 14 and Yale Semantics Reading Group for feedback. All errors are our own.

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