

## Topicality and Quantifier Scope in Mandarin

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Mandarin has been claimed to be a "scope rigid" language (Huang 1982; Aoun and Li 1989, 1993) based on simple transitive examples like (1), which allow only a surface scope reading. Compare English (2), which is scopally ambiguous:

- (1) **San-ge xuesheng** xue-guo **mei-zhong yuyan**.  
**three-CL student** learn-ASP every-CL language  
 3 > ∀: 'There are three students x such that x learned every language.'  
 \*∀ > 3: 'For every language y, y is learned by three possibly different students.'
- (2) **Three students** learned **every language**. (3 > ∀; ∀ > 3)

But, in fact, in a variety of other contexts Mandarin behaves like English with respect to scope interpretation and exhibits ambiguity.

Here we argue that scope interpretation can be explained across a variety of Mandarin syntactic environments under the theory of scope in Fox (2000) and under the view that in (non-thetic) Mandarin matrix clauses the subject is a syntactic topic.

### 1.0 Scope Ambiguities Noted in Previous Literature

- **PP Datives** (Huang 1982:179)

- (3) Zhangsan mai-le **liang-ben shu** gei **mei-ge ren**.  
 Zhangsan buy-ASP **two-CL book** for **every-CL man**  
 2 > ∀: 'There were two particular books that Zhangsan bought for everyone.'  
 ∀ > 2: 'For every person x, Zhangsan bought two possibly different books for x.'

- **PP Locatives** (Liu and Wu 2016).

- (4) Laoshi xie-le **yi-ju hua** zai **mei-ge heiban** shang.  
 teacher write-ASP **one-CL sentence** on **every-CL blackboard** on  
 ∃ > ∀: 'The teacher wrote a (particular) sentence on every blackboard.'  
 ∀ > ∃: 'For every blackboard x, the teacher wrote a (different) sentence on it.'

- **Relative clauses** (Huang 1982:214)

- (5) Wo mai-le **san-ge ren** xie de **mei-ben shu**.  
 I buy-ASP **three-CL man** write DE **every-CL book**  
 3 > ∀: 'There are three persons x such that every book x wrote I bought.'  
 ∀ > 3: 'I bought every three-authored book.'

- **Passives** (Aoun and Li 1989, example 4b)

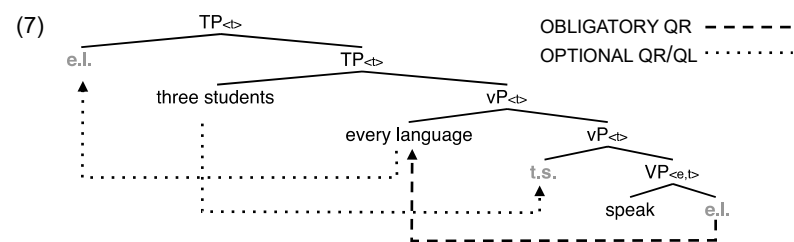
- (6) Yaoshi **liangge xiansuo** bei **meigeren** zhaodao ...  
 if **two clues** by **everyone** found ...  
 2 > ∀: 'if there are two (particular clues) such that everyone found these two, ...'  
 ∀ > 2: 'if for every person x, x found two (possibly different) clues, ...'

## 2.0 Fox (2000) on Scope Interpretation

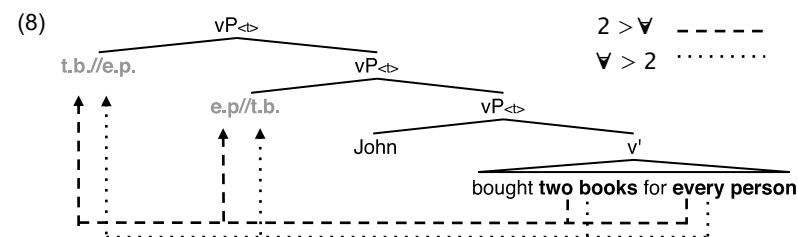
Fox (2000) adopts a standard view of quantifier phrases (QPs) as operators that combine with phrases of sentential type (<t>). Fox's three main principles:

- (A) **Type Disparity**: QPs that are not already sister to a node of type <t> (e.g., objects) must undergo Quantifier Raising (QR) to such a position.
- (B) **Shortest Move**: QR and Quantifier Lowering (QL) move QPs to the closest position where they are sister to a node of type <t>.
- (C) **Scope Economy**: Non-obligatory QR/QL is available when, but only when, this yields a semantic effect - specifically, a truth-conditional difference.

Fox (2000) predicts ambiguity for English transitives via obligatory QR of the object followed by optional object QR or by optional subject QL:



Fox (2000) predicts ambiguity for objects in English PP ditransitives via obligatory QR applied to the QPs in either order:



### Observations:

- Mandarin PP datives and PP locatives pattern the same as English PP datives and PP locatives wrt scope. If we assign them the same structures, we will correctly predict ambiguity for both under Fox (2000).
- Mandarin transitives pattern differently than English transitives wrt scope. If we assign them the same structure, we will incorrectly predict ambiguity for Mandarin. Conclusion under Fox (2000): Mandarin transitives must differ structurally from English in a scope-relevant way. How?

### 3.0 Topicality in Mandarin and Scope Freezing

- Mandarin is widely described as a “topic-prominent” language vs. a subject-object language (Chao 1968; Li and Thompson 1981; Lyu 1979; LaPolla 2009).
- Using feature theory, we might formalize “topic-prominence” in a language L as follows: a topic-prominent language L projects a TopP projection above TP. Constituents  $\alpha$  bearing a  $\theta$ -role can bear a [TOP] feature too; one such  $\alpha$  always raises and checks an interpretable [TOP] feature in the Spec TopP position; in this position  $\alpha$  is interpreted as a topic.

Applying this idea to Mandarin would account for common sentence pairs like (9a-b), where subject and object appear in either order, with no difference either in semantic meaning or thematic relations.

- (9) a. Chuanghu yijing hu-le zhi. (Lyu 1979: 73)  
 Window already paste-ASP paper  
 ‘The window has already been pasted with paper.’
- b. Zhi yijing hu-le chuanghu. (Lyu 1979: 73)  
 Paper already paste-ASP window  
 ‘The paper has already been pasted on the window.’

We might analyze these in terms of alternative movements to TopP. Note that in the case of subject topics, movement is string vacuous and hence “invisible”.

#### Our Proposal:

- Mandarin is “topic-prominent” in the sense described; its matrix clause structure is identical to English up to TP, but it contains a **higher TopP projection** to which Mandarin subjects typically raise. Top itself has no truth-conditional content; it represents information “packaging” not info content.
- Presence of TopP yields scope-frozenness in Mandarin matrix transitives.

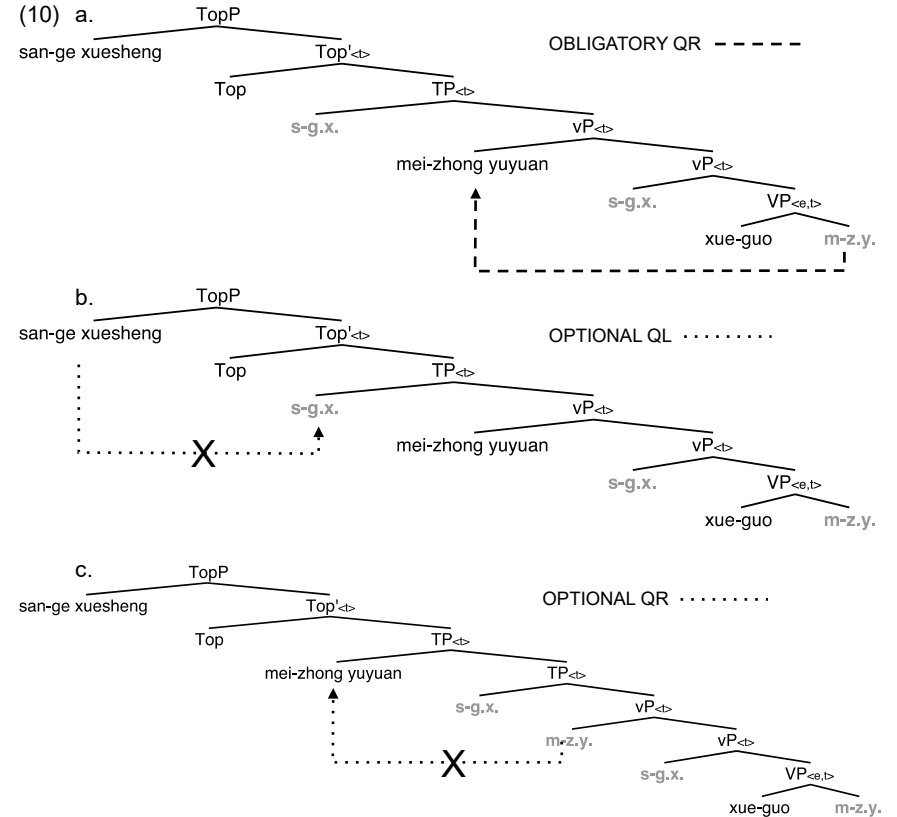
Example: the Mandarin transitive (1) (repeated below) will receive the LF in (10a), where the subject has raised to TopP, and the object has raised by obligatory QR to vP-sister position.

- (1) **San-ge** **xuesheng** xue-guo **mei-zhong** **yuyan**. (3 >  $\forall$ ; \* $\forall$  > 3)  
 three-CL student learn-ASP every-CL language

Optional Quantifier Lowering of the subject back to TP spec position is unavailable since Top is truth-conditionally inert (10b). Scope Economy Violation.

Optional Quantifier Raising of the object to TP-adjoined position is unavailable since this operation is truth-conditionally inert (10c). Scope Economy Violation.

Conclusion: No inversion of the surface QP scope relations is possible with (1).



Mandarin matrix transitives are thus predicted to be scope-frozen under Fox (2000).

#### Key Prediction of the Proposal

- In clausal contexts where (non-contrastive) topicalization is unavailable/less available - i.e., in clauses with a reduced or “truncated” left-periphery - Mandarin should show scope ambiguity.

### 4.0 Scope Ambiguity Elsewhere in Mandarin

#### 4.1 Ambiguity in Mandarin Relative Clause

English shows scope ambiguities in RCs (12) (DEF >  $\forall$ ;  $\forall$  > DEF):

- (12) **The woman** that greeted **every visitor** (was a government official).

Under the Head Raising Analysis of Kayne (1994, Bianchi 1999) (13a), ambiguity is captured by reconstructing the head to its source position (13b). Ambiguity in the RC

thus derives from ambiguity in the underlying transitive clause into which the head lowers.

- (13) a. **The woman** [that **the woman** greeted **every visitor** ].  
 b. **The woman** that [ **the woman** greeted **every visitor**]. (DEF > ∀; ∀ > DEF)

Mandarin also shows scope ambiguities in RCs (14) (Huang 1982):

- (14) Wo jian-guo jiang **mei-zhong yuyan** de **san-ge xuesheng**.  
 I meet-ASP speak **every-CL language** DE **three-CL student**  
 'I have met three students who speak every language.' (3 > ∀; ∀ > 3)

Aoun and Li (2003: 132-138), Hsiao (2003:111), Wu (2018) a.o. argue forcefully that Mandarin RCs should receive a head raising analysis. But (15), the Mandarin transitive underlying (14), is unambiguous. How does ambiguity arise here?

- (15) **San-ge xuesheng** jiang **mei-zhong yuyan**. (3 > ∀; \*∀ > 3)  
**three-CL student** speak **every-CL language**

Rizzi (1997) proposes that RCs involve a reduced left-periphery. Tsai (1995) notes specifically that non-contrastive topics are unavailable in Mandarin RCs (16a-b):

- (16) a. Hendo e<sub>k</sub> xihuan Akiu de ren<sub>k</sub> mei lai. (= Tsai 1995, 16)  
 many like Akiu DE people not come  
 'Many people who like Akiu did not come.'  
 b. \*Hendo Akiu<sub>i</sub> e<sub>k</sub> xihuan e<sub>j</sub> de ren<sub>k</sub> mei lai.  
 many Akiu like DE people not come

Suppose that TopP is unavailable in the left-periphery of RCs. Plausibly the clause into which an RC head lowers should be the next smaller projection in the Rizzi (1997) hierarchy, viz., TP/FinP (17).

- (17) [<sub>DP</sub> [<sub>CP</sub> [<sub>TP</sub> **san-ge xuesheng** jiang mei-zhong yuyan] de [<sub>DP</sub> **san-ge xuesheng**]]]

If so, the scope possibilities for *san-ge xuesheng* 'three students' and *mei-zhong yuyan* 'every language' should now converge with those of English (7). That is, we expect predict scope ambiguity for (14), correctly.

#### 4.2 Ambiguity in Mandarin Passives

Aoun and Li (1989, 1993) assert that Mandarin passive examples like (18) are scopally ambiguous.

- (18) Yaoshi **liangge xiansuo** bei **meigeren** zhaodao ...  
 if two clues by everyone found ...  
 'If two clues were found by everyone...' (2 > ∀; ∀ > 2)

Huang (1999, fn. 16) appears to contradict this judgment: "Chinese passives do not exhibit scope ambiguities any more than the actives do," presumably based on simple passive examples like (19), which seem unambiguous.

- (19) **Liangge xiansuo** bei **meigeren zhaodan**  
**two clues** by **everyone** found  
 'Two clues were found by everyone' (2 > ∀; \*?∀ > 2)

Interestingly, non-contrastive topicalization is strongly disfavored in Mandarin conditional environments like those used by Aoun and Li (20a-b):

- (20) a. Yaoshi Zhangsan kanshou na-ge chukou, .....  
 if Zhangsan guard that-CL exit  
 'if Zhangsan guards that exit...'  
 b. ??Yaoshi na-ge chukou (ne), Zhangsan kanshou, .....  
 if that-CL exit, Zhangsan guard

Suppose conditional clauses are truncated in their left-periphery, with TopP unavailable/less available (Haegeman 2010). Divergence in judgments by Aoun and Li vs. Huang is explained by the syntactic contexts they examine. Conditionals have a reduced left-periphery without TopP, hence ambiguity is expected. Matrix transitives have a fully projected left-periphery with TopP, hence non-ambiguity is expected.

#### 4.3 Ambiguity in Mandarin Embedded Clauses

Embedded clauses like (21a) strongly disfavor non-contrastive topicalization (21b). This suggests that the TopP projection found in matrix clauses is unavailable/less available in embedded clauses.

- (21) a. Jingzhang shuo-guo Zhangsan kanshou na-ge chukou.  
 sheriff say-ASP Zhangsan guard that-CL exit  
 'The sheriff said Zhangsan guards that exit.'  
 b. ??Jingzhang shuo-guo na-ge chukou (ne), Zhangsan kanshou.  
 sheriff say-ASP that-CL exit Zhangsan guard  
 (intended meaning) 'The sheriff said Zhangsan guards that exit.'  
 (actual meaning) 'The sheriff said that exit Zhangsan guards, not this exit!'

If so, this predicts that doubly-quantified embedded clauses like (22a) should more freely allow scope inversion than the corresponding matrix sentence (22b).

- (22) a. Jingzhang shuo-guo **san-ming jingcha** kanshou **mei-ge chukou**.  
 sheriff say-ASP **three-CL policeman** guard **every-CL exit**  
 3 > ∀: 'The sheriff said there are three particular policemen guard every exit'.  
 ∀ > 3: 'The sheriff said for every exit there are three policemen who guard it'.  
 b. **San-ming jingcha** kanshou **mei-ge chukou**.  
 three-CL policeman guard every-CL exit  
 'Three particular policemen guard every exit'. (3 > ∀; \*∀ > 3)

### 4.3 Ambiguity in Mandarin Thetic Sentences

Kuroda (1972) (following Brentano) proposes that sentences can be understood **categorically** or **thetically**. Categorical predications attribute properties to individuals, typically subjects. Thetic predications assert general regularities or the existence of events. Understood categorically, (23) predicates running of some dog.

(23) A dog is running.

Understood thetically, (23) describes an event of running whose agent is recognized as a dog, but whose identity is neither established in previous contexts or at issue. Thetic sentences do not involve topics.; they are not “about” individuals.

Understood thetically, (24) asserts a quantificational regularity to exist or to be required. This interpretation is enhanced by a parenthetical phrase like *anzhao falu guiding* ‘as required by law’. This sentence, although a matrix clause, freely admits an inverse scope interpretation:

(24) (Anzhao falu guding) **san-ming jingcha** kanshou **mei-ge chukou**.  
 (As law demand) **three-CL policeman** guard **every-CL exit**  
 $3 > \forall$ : ‘As required by law, there should be three policemen guarding every exit’.  
 $\forall > 3$ : ‘As required by law, for every exit three policemen should be guarding it’.

Suppose thetic sentences are non-topical in the sense of not having a TopP projection. Then scope ambiguity is expected in (24); its derivation is the same as for the embedded clause in (22a).

## 5.0 Conclusion

### In this paper we have:

- proposed that topicality in Mandarin matrix clauses can be identified as the source of scope frozenness in Mandarin simple active transitives, under the assumption of a TopP projection to which Mandarin subjects raise, and under the theory of scope proposed in Fox (2000);
- examined a range of Mandarin constructions plausibly involving a reduced left-periphery lacking TopP. In these contexts scope ambiguity becomes available.

### Questions to be pursued:

- 1) Can scope frozenness in Mandarin DOCs and pre-verbal PPs also related to TopP projection? (Cépeda and Cyrino 2017)
- 2) Adverbial clauses have been proposed to differ in regard to the projection of their left-peripheries (Haegeman 2012). Do the corresponding Mandarin adverbials show the expected variation in scope ambiguity?
- 3) Does this proposal for Mandarin extend to other languages that have been argued to be both scope-rigid and topic-prominent; e.g., Japanese, Korean, Hungarian, Persian and Turkish?

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