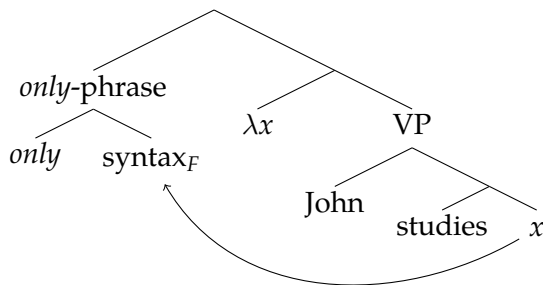# Case study: Mandarin Chinese *wh*-in-situ

1 Review: two strategies for scope-taking

(1) John *only* studies [syntax]$_F$.

Only quantifies over a set of alternatives which vary in the F-marked position. This quantification takes scope in the position where *only* is. Two ways of doing this:
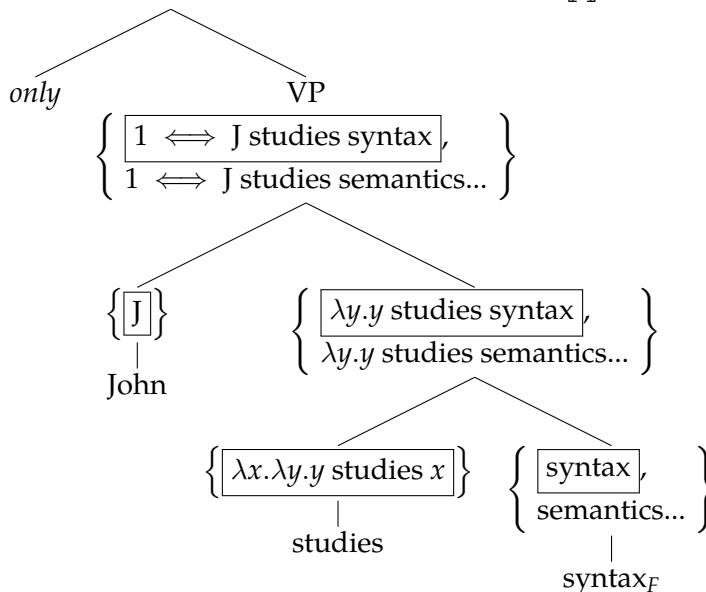
(2) **Covert movement:**

☞ Should behave like (covert) $\overline{\text{A}}$-movement: long-distance, island-sensitive, extraction asymmetries, weak crossover, (pied-pipes?)...

(3) **In-situ interpretation via Rooth/Hamblin alternative computation:**
Each node has its focus-semantic value $[\![\cdot]\!]^f$ with ordinary value $[\![\cdot]\!]^o$ in a box.

☞ No movement: no island-sensitivity, no positional asymmetries, but still can be long-distance.

As we've seen, the availability of these two different strategies also extends to the interpretation of *wh*-questions: *wh*-words can move (overtly or covert) or they can be interpreted *in-situ* via alternative computation (Hamblin, 1973).

2   Mandarin Chinese (Huang, 1982)

☞ Overt movements behave as we expect: island-sensitive.

(4)   **Relative clause island:**
   a.   Wo mai-le   [[$_{RC}$ Zhangsan xie   *t*] de shu].
       I   buy-ASP   Zhangsan write   DE book
       'I bought books that Zhangsan wrote.'
   b.   * Zhangsan$_i$, wo mai-le   [[$_{RC}$ *t$_i$* xie   *t*] de shu].
       Zhangsan, I   buy-ASP   write   DE book
       Intended: 'Zhangsan, I wrote the book that *t* wrote.'
   c.   * [[$_{RC}$ Wo mai-le   [[$_{RC}$ *t$_i$* xie   *t*] de shu]] de neige ren]   lai-le.
           I   buy-ASP   write   DE book DE that   person come-ASP
       Intended: 'The man$_i$ [that I bought the books [that *t$_i$* wrote]] came.'

So far, things look a lot like English.

☞ But Mandarin Chinese is a *wh*-in-situ language.

(5)   ***Wh*-questions (in-situ) are not sensitive to relative clause and CNP islands:**
   a. $^\checkmark$Ni   mai-le   [[$_{RC}$ *shei*   xie   *t*] de shu]?
       you buy-ASP   who write   DE book
       'Who is the *x* such that you bought books that *x* wrote?'
       = *'Who did you buy the book [$_{RC}$ that *t* wrote]?'
   b. $^\checkmark$Ni   xihuan [[$_{RC}$ wo piping   *shei*] de wenzhang]?
       you like   I   criticize who DE article
       'Who is the *x* such that you like the articles in which I criticize *x*?'
       = *'Who do you like the articles [$_{RC}$ where I criticize *t*]?'

Assuming the *wh*-words need to move covertly to the matrix CP to take scope (as assumed by Huang, and reflected in his translations), these *wh*-questions should violate the Complex NP constraint. And yet they're fine.

(6) **Sentential subject island: active for overt movements but not *wh*-in-situ:**

    a.   [$_{SS}$ Lisi da-le neige ren]   shi   wo hen bu-gaoxing
            Lisi hit-ASP that   person make me very not-happy

        'That Lisi hit that person made me very unhappy.'

    b. ^{??} Neige ren,   [$_{SS}$ Lisi da-le   *t*] shi   wo hen bu-gaoxing
           that   person   Lisi hit-ASP   make me very not-happy

        'That person, that Lisi hit *t* made me very unhappy.'

    c. ^{??} [$_{RC}$ [$_{SS}$ Lisi da-le   *t*] shi   wo hen bu-gaoxing] de neige ren
                Lisi hit-ASP   make me very not-happy   DE that   person

        'the man [that [that Lisi hit *t*] made me very unhappy].'

    d. ✓ [$_{SS}$ Lisi da-le *shei*] shi   ni hen bu-gaoxing?
            Lisi hit-ASP who make you very not-happy

        'Who is the *x* such that the fact that Lisi hit *x* made you very unhappy?'
        = *'Who did [that Lisi hit *t*] make you very unhappy?'

(7) **Adjunct island: active for overt movements but not *wh*-in-situ:**

    a.   Zhejian shi   [gen [$_S$ neige ren   mei lai]] wu   guan.
           this   matter with   that   person not come not.have relation

        'This matter has nothing to do with that person not coming.'

    b. * Neige ren,   zhejian shi   [gen [$_S$ *t* mei lai]] wu   guan.
          that   person this   matter with   not come not.have relation

        'That person, this matter has nothing to do [with *t* not coming].'

    c. * [$_{RC}$ Zhejian shi   [gen [$_S$ *t* mei lai]] wu   guan] de neige ren
               this   matter with   not come not.have relation DE that   person

        'That person [that this matter has nothing to do [with *t* not coming]].'

    d. ✓ Zhejian shi   [gen [$_S$ *shei* mei lai]] you guan.
          this   matter with   who not come have relation

        'Who is the *x* such that this matter has something to do with *x*'s not coming.'
        = *'Who does this matter have something to do with *t* not coming?'

(8) **Left branch constraint: active for overt movements but not *wh*-in-situ:**

    a.   Wo renshi Zhangsan de   muqin.
           I   know Zhangsan POSS mother

        'I know Zhangsan's mother.'

    b. * Zhangsan (de),   wo renshi *t* (de) muqin.
          Zhangsan (POSS), I   know   POSS mother

        'Zhangsan, I know [his] mother.'

    c. * [$_{RC}$ wo renshi *t* (de) muqin] de neige ren.
              I   know   POSS mother DE that   person

        'the person that I know [his] mother'

    d. ✓ Ni renshi *shei* de muqin.
         you know who POSS mother

        'Whose mother do you know?'
        = *'Whose do you know *t* mother?'

(9) **Mandarin does not allow preposition stranding for overt movements:**

    a.   Wo gen Zhangsan bu shou.
            I   with Zhangsan not familiar
            'I am not familiar with Zhangsan.'

    b.   * Zhangsan, wo gen *t* bu shou.
            Zhangsan, I   with   not familiar
            'Zhangsan, I am not familiar with.'

    c.   * [$_{RS}$ Wo gen *t* bu shou]   de neige ren
               I   with   not familiar DE that   person
            'that person I am not familiar with.'

    d.   ✓Ni gen *shei* bu shou?
            you with who not familiar
            'Who are you not familiar with?'

3   Analysis

3.1 Huang's analysis

Huang's idea is that (a) wh-in-situ is always interpreted via covert movement and (b) there are systematic differences between conditions on overt and covert movement.

> "In short, it has been shown that the following principles do not obtain in LF, though they do in Syntax: the CNPC, the Wh Island Condition, the Sentential Subject Constraint, the Subject Condition, the general ban on preposition stranding, the ban on extraction from an adjunct clause or phrase (in NP or in S; the special ban on stranding a non-subcategorized preposition in English falls under the last category), as well as the Left Branch Condition."   (p. 502)

For example, in English, overtly moved *wh* and *wh*-in-situ (in multiple questions) behave differently with respect to island-sensitivity:

(10) **Overtly moved vs in-situ *wh* in English:** (Huang cites Hankamer 1975)

    a.   * In order to foil this plot, we must find out [*which senator*$_i$ the agent has bats [$_{RC}$ that are trained to kill t_i]].

    b.   In order to foil this plot, we must find out [*which agent* has bats [$_{RC}$ that are trained to kill *which senator*]].

    c.   * *Who*$_i$ do you like books [$_{RC}$ that criticize t_i]?

    d.   *Who* likes books [$_{RC}$ that criticize *who*]?

3.2 Our analysis

There is another option for interpreting *wh*-in-situ. Alternative computation can be used to evaluate *wh*-in-situ without movement (Hamblin, 1973), predicting no island sensitivity.

☞ Let's push this approach as far as possible for Mandarin and see what happens.
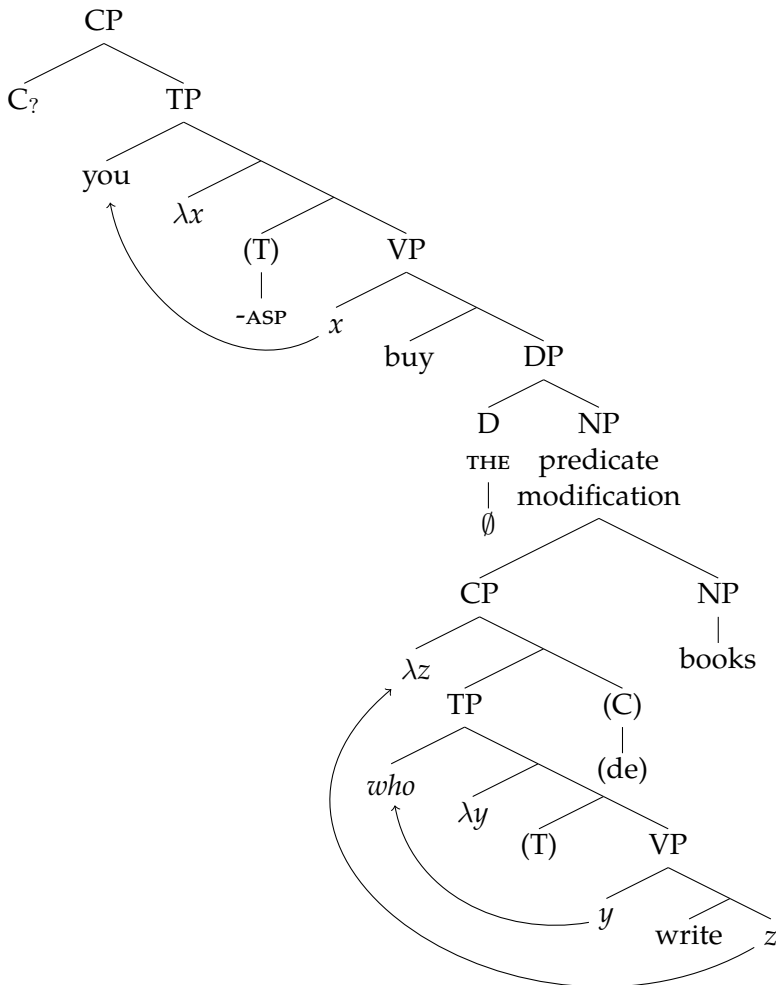
(11) **The semantics of *who*:**
Ordinary semantic value: $[\![who]\!]^o$ is undefined
Focus-semantic value: $[\![who]\!]^f = \{x_e : x \text{ is human}\}$

(12) **The semantics of interrogative C** (Beck and Kim 2006, see also Shimoyama 2001)
$[\![[\text{C TP}]]\!]^o = [\![\text{TP}]\!]^f$

(5a′) Ni mai-le [[$_{RC}$ *shei* xie *t*] de shu]?
you buy-ASP   who write DE book
'Who is the *x* such that you bought books that *x* wrote?'

$\left(\begin{array}{l}\text{Does this also extend to in-situ } wh \text{ in English multiple } wh\text{-questions (10)? Come to}\\ \text{colloquium on Friday to find out!}\end{array}\right)$

4 Adjunct *wh*-questions

The Mandarin examples above were all based on (simple) *wh*-arguments like 'who' and 'what.' It turns out the behavior of *wh*-adjunct questions are different.

(13) **Argument and adjunct *wh* in relative clauses in subject position:**

    a. ✓[$_{RC}$ *Shei* xie   *t*] de shu   zui   youqu?
            who write   DE books most interesting
        'Books that *who* wrote are the most interesting?'

    b. *[$_{RC}$ Ta *weishenme* xie   *t*] de shu   zui   youqu?
            he why   write   DE books most interesting
        'Books that he wrote *why* are the most interesting?'

    c. *[$_{RC}$ Ta *zenme* xie   *t*] de shu   zui   youqu?
            he how   write   DE books most interesting
        'Books that he wrote *how* are the most interesting?'

Note that questions with meanings very similar to what is intended in (13b–c) can be constructed if *wh*-arguments are used:

(14) a. ✓[$_{RC}$ Ta [wei-le *shenme yuanyin*] xie   *t*] de shu   zui   youqu?
            he for   what reason   write   DE books most interesting
        'Books that he wrote for *what reason* are the most interesting?'

    b. ✓[$_{RC}$ Ta [yong *shenme*] xie   *t*] de shu   zui   youqu?
            he using what   write   DE books most interesting
        'Books that he wrote using *what* are the most interesting?'

At this point we might wonder if the relevant contrast is between DP vs non-DP *wh*-words. Huang shows that 'where' and 'when' pattern together with 'who' and 'what.'

(15) a. ✓[$_{RC}$ Ta zai *nali*   pai   *t*] de dianying zui   hao?
            he at   where film   DE movie   most good
        'Movies that he filmed *where* are the best?'

    b. ✓[$_{RC}$ Ta (zai) *shenme shihou* pai   *t*] de dianying zui   hao?
            he (at) what time   film   DE movie   most good
        'Movies that he filmed *when* are the best?'

But note the use of the locative preposition *zài* on the *wh*-words. It's possible that *nali* 'where' and *shenme shihou* 'when' are DPs, so we still aren't sure, which Huang acknowledges.

4.1 Huang's analysis

Huang's rhetoric ultimately adopts the argument/adjunct division as the relevant split, (at least in part) because of parallels to other, overt extraction asymmetries:

(16) ***Wh*-adjuncts can be harder to extract:**
    a.   Of which city did you witness [the desctruction *t*]?
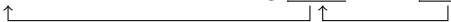   b.   * On which table did you like [the books *t*]?

"There is some plausibility in assuming that operators that bind non-argument traces must obey a stricter locality condition than those that bind argument traces." (p. 542)

(17) **Subjacency (Chomsky, 1973):**
No movement rule may involve X and Y in:
... X ... [$_\alpha$ ... [$_\beta$ ... Y ...] ...] ... X ...
where α and β are bounding nodes [= NP and $\overline{\text{S}}$].
<u>Huang's conclusion:</u> applies only in "Syntax" (narrow syntax, before LF).

(18) **Empty Category Principle (Chomsky, 1981, ECP):**
An empty category must be properly governed.
<u>Huang's conclusion:</u> applies at Syntax and at LF.

(19) A *properly governs* B if and only if A governs B [A is in a position which could case-license B] and

    (a)   A is a lexical category, or

    (b)   A is co-indexed with B.

Because Subjacency is not active, LF movement does not have to be successive-cyclic, so it can violate islands (*wh*-argument behavior). But for *wh*-adjuncts, the ECP forces successive-cyclicity, and thus island-sensitivity.

(20) **Derivations for *wh*-adjunct LF movement, based on p. 552:**
    a.   ✓Ni   renwei [ta *weishenme* lai]?
           you think   he why   come
           'Why do you think he will come?' (matrix question)
    b.   ✓<u>LF:</u> [$_{\overline{S}}$ *weishenme* [$_S$ ni renwei [$_{\overline{S}}$ ___ [$_S$ ta ___ lai]]?

    c.   * <u>LF:</u> [$_{\overline{S}}$ *weishenme* [$_S$ ni renwei [$_{\overline{S}}$ [$_S$ ta ___ lai]]?

Proper government requires either a lexical head to govern it or the antecedent in a position that governs it. Arguments have a lexical head which case-licenses it (therefore governs), but adjuncts do not, so adjunct traces need their antecedents to be in a position that governs it, which means it must be within the same clause.

4.2 Our analysis

- *Wh*-arguments do not (need to) move;
- *Wh*-adjuncts must move to their interpreted position;
- All movement is successive cyclic.

We do not need the separate ECP and Subjacency, applying at different points in the derivation. However, we have to stipulate a difference between *wh*-arguments and *wh*-adjuncts.

5 *Wh*-islands and multiple *wh*

(21) Ni xiang-zhidao [*shei* mai-le *shenme*]
    you wonder   who buy-ASP what

    a. 'Who is the person x such that you wonder [what x bought]?'
        = *'Who do you wonder [what t bought]?'
    b. 'What is the thing x such that you wonder [who bought x]?'
        = *'What do you wonder [who bought t]?'
    c. 'You wonder [who bought what]'   (not given by Huang, but possible)

(22) Ni xiang-zhidao [*shei weishenme* mai-le shu]
    you wonder   who why   buy-ASP book

    a. * 'What is the reason x such that you wonder [who bought books for x]?'
    b. √ 'Who is the person x such that you wonder [why x bought books]?'

(23) Ni xiang-zhidao [*shei zenme* mai-le shu]
    you wonder   who how   buy-ASP book

    a. * 'In what manner/way x do you wonder [who bought books in way x]?'
    b. √ 'Who is the person x such that you wonder [how x bought books]?'

Discuss!

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