A NOTE ON WIDE SCOPE EFFECTS OF UNIVERSAL QUANTIFICATION IN CHINESE[*]

Wei-Tien Dylan Tsai

National Tsing Hua University

1. The Unselectivity of Unselective Binding

Chinese is often taken to be a language exemplifying extensive construals of unselective binding due to its robust analyticity (Cheng & Huang 1996, 2020; Lin 1998; Tsai 1999, 2023; among others). For instance, as pointed out by Huang (1988), there is no word for *nobody* in Chinese: As in (1a), *mei* 'have.not' serves as a discrete negative existential modal rather than a determiner, unselectively binding the bare noun subject *ren* 'person'. Interestingly, it can also be placed after the subject, as in (1b), where it functions as an aspectual operator binding an implicit event argument introduced by the main predicate (cf. Parsons 1990). By contrast, *mei* can never form part of the object DP in (1c).

(1) a. **mei** ren lai.
     have.not person came

    'There wasn't anyone coming.'
    沒人來。

  b. ren **mei** lai.
     person have.not come

    'The guy hasn't come.'
    人沒來。

  c.* wo xiangxin [**mei** ren].
     I trust have.not person

    'I trust nobody.'
    ＊我相信沒人。

Exactly the same pattern is attested for *you* 'have' in Taiwan Mandarin (cf. Tsai 2003a), as shown below.

---

(2) a. **you** ren   lai.
         have person came

        'There was someone coming.'
        有人來。

     b. ren   **you** lai.
         person have come

        'The guy has come.'
        人有來。

     c.* wo xiangxin   [**you** ren].
         I   trust   have person

        'I trust somebody.'
         ＊我相信有人。

The unselectivity demonstrated above can be typologically correlated with the scope isomorphism observed in Huang (1982), according to which a quantifier is not subject to quantifier raising (QR) in Chinese. As a matter of fact, we can push the idea further along the line of Tsai (1994, 1999) by claiming that, in Chinese, an operator-variable pair is constructed in-situ on a sentential scale. As a result, operators are merged to a scopal position, whereas indefinites (or indeterminates in Kuroda's (1965) sense) are merged to their base positions down below. Both appear at where they should be without resorting to movement or QR.

In addition, there is an array of quantificational constructions that exhibit exactly the same property: As seen in (3), movement is unlikely to play a part in associating *dou* 'all' in the matrix clause and the *wh*-in-situ *shei* 'who' embedded within the complex NP island. A further comparison with (4) reveals that the similarity between indefinite and interrogative *wh*-expressions with respect to their quantificational construals is particularly striking, the latter being licensed by an implicit Q-operator (or its lexical counterpart *ne*) instead of *dou*.

(3) *indefinite wh-construal:*
     [DP [CP **shei** qian-guo ming] de shu]   **dou** mai-de bucuo.
             who sign-Exp name   DE book   all   sell-DE well

     'For every book y, no matter who signed y, y sells well.'
     [[誰簽過名]的書]都賣得不錯。

(4) *interrogative wh-construal:*
    [DP [CP **shei** qian-guo ming] de shu]   mai-de   zuihao (ne)?
         who sign-Exp name DE book   sell-DE   best Q_{wh}

    'Who is the person x such that books which x signed sell best?'
    [[誰簽過名]的書]賣得最好?

The resemblance is again strong with respect to various wide scope interpretations associated with in-situ quantifiers, such as the polarity licensing in (5) and the universal quantification in (6):

(5) *polarity licensing:*
    [DP [CP **renhe zuozhe** qian-guo ming] de shu] **dou** mai-de bucuo.
         any   author   sign-Exp name DE book all   sell-DE well

    'For any author x, every book which x signed sells well.'
    [[任何作者簽過名]的書]都賣得不錯。

(6) *universal quantification:*
    [DP [CP **meige zuozhe** qian-guo ming] de shu] **dou** mai-de bucuo.
         every   author   sign-Exp name DE book all   sell-DE well

    'For every author x, every book which x signed sells well.'
    [[每個作者簽過名]的書]都賣得不錯。

This article deals with the following two issues: One is the defining syntactic characteristics of unselective binding in typological terms. The other is the syntactic locality on such a mechanism, in particular, pertaining to universal quantification in Chinese. From our point of view, unselective binding is employed where the operator and the variable involved do not have a morphological bound between them. In fact, there is no apparent reason why binding should be selective per se, and unselective binding should be taken to be the fundamental dependency behind question and quantification.

2. Wide Scope Effects and Unselective Binding

We begin with universal quantification in Chinese, where the pattern of wide scope construals is most prominent. As a working hypothesis, we will take *dou* to be a scope marker along the line of Huang (1982, 1983). In addition, Tsai & Yang (2002) has put forth the claim that a subject *mei*-NP forms an operator-variable pair with *dou*, whereas an object *mei*-NP is licensed by an implicit universal operator merged to the *v*P domain. Take the following two *dou*-constructions for instance: When *dou* appears in the matrix clause, we get the wide scope reading of (7a). By contrast, when *dou* appears in the complex NP, as in (7b), the *mei*-NP takes narrow scope instead.

(7) a. [$_{DP}$ [$_{CP}$ meige zuozhe(x) qian-guo ming] de shu] **dou$_x$** mai-de bucuo.
              every   author   sign-Exp name DE book all   sell-DE well

    'For every author x, every book which x signed sells well.' (wide scope)
    [[每個作者簽過名]的書]都賣得不錯。

  b. [$_{DP}$ [$_{CP}$ meige zuozhe(x) **dou$_x$** qian-guo ming] de shu] mai-de bucuo.
              every   author   all   sign-Exp name DE book sell-DE well

    'Books which every author signed sells well.' (narrow scope)
    [[每個作者都簽過名]的書]賣得不錯。

For the object *mei*-NP embedded within the object complex NP in (8), there are also two readings: The *mei*-NP takes the wide scope in (8a), indicating that it is every book introducing tourist attractions which was bought by Akiu. (8b), on the other hand, marks the narrow scope interpretation where it is a book introducing every tourist attraction that was bought by Akiu.

(8) Akiu   mai-le   [$_{DP}$ [$_{CP}$ jieshao   meige lyuyoudian]   de shu]].
      Akiu   buy-Prf   introduce every tourist.attraction DE book

  a. 'For every tourist attraction x, Akiu has bought books which introduce x.'
    (wide scope)
  b. 'Akiu has bought a book which introduces every tourist attraction.'
    (narrow scope)
    阿Q買了[[介紹每個旅遊點]的書]。

For (8a), we propose that there is a silent universal operator ∀ merged to the edge of matrix *v*P, marking the scope for the embedded object *mei*-NP, very much like the matrix unselective binder *dou* in (7a). The long distance construal is sketched in (9a). For (8b), the binding relation is local, as the scope of the *mei*-NP in question is marked by the silent operator appearing on the edge of the embedded *v*P, as illustrated in (9b).

(9) a. Akiu   ∀$_x$ [$_{vP}$ mai-le [$_{DP}$ [$_{CP}$ jieshao **meige lyuyoudian**(x)] de shu]]

  b. Akiu   mai-le [$_{DP}$ [$_{CP}$ ∀$_x$ [$_{vP}$ jieshao **meige lyuyoudian**(x)] de shu]]

There are two reasons why long-distance QR does not work here: First, QR is usually clause-bound, let alone creating a long-distance dependency across a complex NP island. Second, as noted by Huang (1982), Chinese strictly observes the so-called scope isomorphism. This typological feature in turn can be attributed to its robust analyticity, since quantifiers are typically constructed on a sentential scale (cf. Tsai 1994, 1999).

This proposal also works in our favor when we consider the case of a subject *mei*-NP embedded in an object complex NP, as exemplified by (10). The silent operator analysis presented above makes the correct prediction that the narrow scope reading of (10b) is ruled

out since the *mei*-NP in question is simply beyond the scope of the embedded silent operator, resulting in vacuous quantification, as illustrated in (11b). The high scope reading of (10a), on the other hand, is licensed by the matrix silent operator, as in (11a).

(10) Akiu   mai-le   [DP [CP meige   zuozhe   qian-guo ming] de shu].
     Akiu   buy-Prf   every   author   sign-Exp name   DE book

    a. 'For every author x, Akiu bought a book which x signed.'   (wide scope)
    b.# 'Akiu bought a book which every author signed.'   (#narrow scope)
       阿Q買了[[每個作者簽過名]的書]。

(11) a.   Akiu   mai-le $\forall_x$ [vP [DP [CP **meige zuozhe**(x) qian-guo ming] de shu]]

    b.* Akiu   mai-le   [DP [CP **meige zuozhe** $\forall$ [vP qian-guo ming] de shu]]

Given what we have just said about Chinese universal quantification, one may wonder what the theoretical status of the implicit universal operator is: As a working hypothesis, we would like to take this operator, as well as its lexical counterpart *dou*, as part of a "quantifier complex", or a composite quantifier similar to the *ne ... pas* composition in French. This approach is particularly interesting in view of a recent proposal by Liu (2021), where *dou* serves as a presupposition maximizer for a variety of quantificational expressions such as *suoyou* 'all', *lien* 'even', *wulun* 'no matter', etc. To save the narrow scope interpretation of *meige*-NP in (10), the lexical scope marker *dou* must be added in the relative clause, where it forms a composite quantifier with *mei*, hence "closing off" the variable introduced by the embedded subject NP. This is evidenced by the presence of the narrow scope reading of (12b), as well as the unavailability of the wide scope reading of (12a).

(12) Akiu   mai-le   [DP [CP meige   zuozhe(x)   **dou**x qian-guo ming] de shu].
     Akiu   buy-Prf   every   author   all   sign-Exp name   DE book

    a.# 'For every author x, Akiu bought a book which x signed.'   (#wide scope)
    b. 'Akiu bought a book which every author signed.'   (narrow scope)
       阿Q買了[[每個作者都簽過名]的書]。

To see how the idea works in formal terms, let's take a look at the diagram below. As illustrated in (13a), the subject *mei*-NP in (7a,b) is licensed by *dou*, while the object *mei*-NP in (8a,b) is licensed by the implicit operator $\forall$, as in (13b). English, by contrast, merges a universal operator to an indefinite NP, as in (13c). As a result, it must employ QR, pied-piping the *every*-NP to mark its sentential scope in LF:

(13) a.   … *mei*-NP(x) ... *dou*x ... [vP …   (Chinese, subject position)

    b.   ... $\forall_x$ [vP … *mei*-NP(x) …   (Chinese, object position)

c.   … $every_x$-NP(x) … → [$every_x$-NP(x)]$_k$ … t_k …   (English)

The same account can be extended to their corresponding *wh*-constructions such as (14a) ((4) repeated here) and (14b) in a straightforward manner: Both the subject and object *wh's*-in-situ in the relative clause are unselectively bound by the scope marker *dou*, resulting in the wide-scope indefinite *wh*-construals in question.

(14) a.   [$_{DP}$ [$_{CP}$ nage   zuozhe(x) qian-guo ming] de shu] **dou$_x$** mai-de   bucuo.
                      which author   sign-Exp name DE book all   sell-DE   well

'For every author x, [books that x signed] sell well.'
[[哪個作者簽過名]的書]都賣得不錯。

b.   [$_{DP}$ [$_{CP}$ jieshao   nage   lyuyoudian(x)] de shu] **dou$_x$** mai-de bucuo.
                      introduce   which tourist.attraction DE book all   sell-DE well

'For every tourist attraction x, [books that introduces x] sell well.'
[[介紹哪個旅遊點]的書]都賣得不錯。

Likewise, once *dou* is replaced by an implicit Q-operator merged to the left periphery, wide-scope interrogative readings duly emerge, as evidenced by (15a,b).

(15) a.   **Q$_x$** [$_{DP}$ [$_{CP}$ nage   zuozhe(x) qian-guo ming] de shu] mai-de zuihao?
                            which author   sign-Exp name DE book sell-DE best

'Who is the author x such that [books that x signed] sell best?'
[[哪個作者簽過名]的書]賣得最好?

b.   **Q$_x$** [$_{DP}$ [$_{CP}$ jieshao   nage   lyuyoudian(x)] de shu] mai-de zuihao?
                            introduce   which tourist.attraction DE book sell-DE best

'Which is the tourist attraction x such that [books that introduces x] sell well?'
[[介紹哪個旅遊點]的書]賣得最好?

By contrast, just like a suffixal operator such as *-ever* in *whoever* and *whatever*, the Q-operator forms part of a *wh*-indefinite in English. Consequently, the entire *wh*-Q complex must undergo LF pied-piping to a sentential scope position, presumably the Spec of CP, as sketched below (cf. Tsai 1994, 1999).

(16) … *wh*(x)-Q$_x$ …   →   [$_{CP}$ [*wh*(x)-Q$_x$]$_k$ [$_{IP}$ … t_k …   (English)

Now we are able to make a full-fledged comparison between question and universal quantification. Namely, as proposed by Cheng (1991, 1995), Li (1992), Aoun & Li (1993a), Chinese *wh's*-in-situ behave very much like a polarity variable, which is subject to external licensing from a variety of operators (negative, conditional, modal, interrogative, etc.). Here we

follow Reinhart (1997, 1998) in analyzing a nominal *wh*-in-situ as a choice function variable, which carries over directly to the noun-adverb asymmetry of Chinese *wh*-construals discussed extensively in Huang (1982) and Tsai (1994, 1999, 2003b), among others.

As shown above, Chinese universal quantifiers behave in very much the same way. In light of the parallel between universal and *wh*-construals, we may well follow Lin (2004) in extending the choice function variable analysis to *mei*-NPs, which need external licensing from *dou* in the subject position, and from the implicit operator ∀ in the object position.

3. The Selectiveness of Implicit Unselective Binders

An interesting issue arises when we consider the residues of wide scope *wh*-construals in object strong islands: As exemplified below, *wh's*-in-situ in question are interpreted as interrogative rather than universal. This is quite unexpected since there should be a ∀-operator readily available for licensing the *nage zuozhe* 'which author' in (17) and *nage lyuyoudian* 'which tourist attraction' in (18), and since it is a much closer binder than the Q-operator on the left periphery.

(17) Akiu   mai-le   [DP [CP nage   zuozhe   qian-guo ming] de shu]?
      Akiu   buy-Prf   which   author   sign-Exp name DE book

      'Who is the author x such that Akiu bought a book that x signed?'
      阿Q買了[[哪個作者簽過名]的書]?

(18) Akiu   mai-le   [DP [CP jieshao   nage   lyuyoudian(x)] de shu]?
      Akiu   buy-Prf   introduce which   tourist.attraction DE book

      'Where is the tourist attraction x such that Akiu bought a book that introduces x?'
      阿Q買了[[介紹哪個旅遊點]的書]?

Therefore, the elephant in the room is why (17) and (18) are construed in the way of (19a), rather than that of (19b). To put the issue in perspective, we may proceed to asking why the ∀-operator does not block the higher Q-operator due to the Minimal Binding Requirement, which states that variables must be bound by the most local potential A'-binder (cf. Aoun & Li 1989, 1993b), as illustrated by (19c).[1]

(19) a. [CP Qx [IP ... [DP [CP ... *wh*(x) ...]]]]

      b. ... [vP ∀x [vP ... [DP [CP ... *wh*(x) ...]]]]

---

[1] For the ease of illustration, here we continue to use the traditional notations instead of the following ones along the line of the choice function analysis:

(i)   a. [CP Qf [IP ... [DP [CP ... f(*wh*) ...]]]]
       b. ... [vP ∀f [vP ... [DP [CP ... f(*wh*) ...]]]]

c. $[_{CP} Q_x [_{IP} ... [_{vP} \forall [_{vP} ... [_{DP} [_{CP} ... wh(x) ...]]]]$
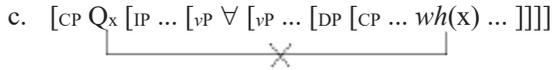
As far as we can see, there are two ways to approach the problem: Firstly, we may stipulate that, as least for implicit operators, Q always takes precedence over $\forall$. However, this move forces us to make exactly the opposite claim for the universal scope marker *dou*. This is because *dou* is such a potent "closer" for both *wh's*-in-situ and *mei*-NPs that no further interrogative construal is possible. Secondly, it may well be the case that a $\forall$-operator is selective in picking its licensee in its rather limited scope of *v*P. In other words, it serves only *mei*-NPs, and (19b) is never an option for a *wh*-in-situ. Furthermore, inserting an implicit operator (e.g., existential closure) should be employed only as the last resort (cf. Tsai 2001). As a result, once we merge a Q-operator on the CP layer to close off the choice function variable introduced by the *wh*-in-situ, no $\forall$-operator is allowed on the intermediate scope position. In other words, (19c) will never be a potential derivation. We will pursue the second alternative, and provide a more coherent account of relevant locality effects.

4. Specificity Condition and Intervention Effects

Another aspect of the wide scope universal construals discussed so far concerns locality effects. The first thing coming to mind is the classic specificity condition in the sense of Higginbotham & May (1981). As illustrated by (20), the licensing from the matrix scope marker *dou* is blocked when the determiner *naben* 'that' is added to the complex NP. The only way to save the sentence is to place *dou* within the complex NP island, which results in the narrow scope interpretation of (21).

(20) * [_{DP} **naben** [_{CP}meige zuozhe(x) qian-guo ming] de shu]   **dou**$_x$ mai-de bucuo.
           that   every author   sign-Exp name DE book   all   sell-DE well

    'For every author x, the book that x signed sells well.'
   * [那本[每個作者簽過名]的書]都賣得不錯。

(21) [_{DP} **naben** [_{CP}meige zuozhe (x) **dou**$_x$ qian-guo ming] de shu] mai-de bucuo.
           that   every author   all   sign-Exp name DE book sell-DE well

    'The book which every author signed sells well.'
   [那本[每個作者都簽過名]的書]賣得不錯。

The same pattern is attested for *mei*-NPs in an object complex NP, as evidenced by the contrast between (22a) and (22b): The wide scope reading is ruled out since the licensing from the matrix $\forall$-operator is again blocked by the intervening determiner *naben*. On the other hand, the narrow scope reading is saved by the one merged to the embedded *v*P, very much in the same manner illustrated in (13b).

(22) Akiu mai-le [DP **naben** [CP jieshao meige lyuyoudian] de shu]].
      Akiu buy-Prf that introduce every tourist.attraction DE book

    a.# 'For every tourist attraction x, Akiu has bought the book which introduces x.'
      (#wide scope)
    b. 'Akiu has bought the book which introduces every tourist attraction.'
      (narrow scope)
      阿Q買了[那本[介紹每個旅遊點]的書]。

Similarly, (23) is ill-formed because the licensing of the matrix $\forall$-operator is blocked by the determiner. Just as expected, the only way to save the narrow scope construal is for *dou* to merge low to license the subject *mei*-NP in (24).

(23) * Akiu mai-le [DP **naben** [CP meige zuozhe qian-guo ming] de shu].
      Akiu buy-Prf that every author sign-Exp name DE book

    'For every author x, Akiu has bought the book which x signed.'
   * 阿Q買了[那本[每個作者簽過名]的書]。

(24) Akiu mai-le [DP **naben** [CP meige zuozhe **dou** qian-guo ming] de shu].
      Akiu buy-Prf that every author all sign-Exp name DE book

    'Akiu has bought the book which every author signed.'
    阿Q買了[那本[每個作者都簽過名]的書]。

      Here we do not submit to the view that intervention effects can only be triggered by movement (cf. Beck 1996; Beck & Kim 1997; Pesetsky 2000, among others). Instead, we elect to adopt a feature-based version of relativized minimality advocated by Rizzi (2004), where the intervening factors have been reclassified into the following four types:

I.   Argumental: person, number, gender, case
II.   Quantificational: Wh, Neg, measure, focus...
III.   Modifier: evaluative, epistemic, Neg, frequentative, measure, manner, ...
IV.   Topic

As discussed extensively in Yang (2012), unselective binding is subject to strong intervention effects, but not to weak intervention effects. Tsai & Li (2016) also shows that the latter effects on argumental/nominal *wh's*-in-situ can be easily overcome by a prosodic strategy such as stress placement. We will therefore take the specificity effects in question to be an instance of strong intervention, presumably due to a clash of quantificational features when a definite determiner cut in a discrete composite quantifier in (20), (22a) and (23), as illustrated below.

(25) a. [$_{DP}$ *naben* [$_{CP}$ … *mei*-NP(x) ...]] ... *dou*$_x$ ...
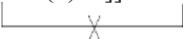
b. ... $\forall_x$ [$_{vP}$ … [$_{DP}$ *naben* [$_{CP}$ … *mei*-NP(x) …]]]
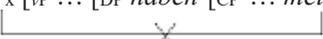
Our observation is reminiscent of Huang's (1982) observation that long-distance *wh*-construals observes the specificity condition, as exemplified by (26). As sketched in (27), our account extends to this strong intervention effect in a straightforward manner.

(26) * [$_{DP}$ **naben** [$_{CP}$ shei qian-guo ming] de shu] mai-de zuihao?
that who sign-Exp name DE book sell-DE best

'Who is the person x such that books which x signed sell best?'
* [那本[誰簽過名]的書]賣得最好?

(27) [$_{CP}$ Q$_x$ [$_{IP}$ … [$_{DP}$ *naben* [$_{CP}$ … *shei*(x) …]]]
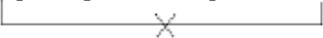
Another support of our unselective binding analysis has to do with the intervention from another instance of composite quantifier in Chinese, i.e., the combination between the matrix aspect marker *-le* and the numeral specifier *yiben* 'one' merged to the complex NP: The wide scope construal of the *mei*-NP is blocked, as in (28a), while the narrow scope reading remains valid, presumably licensed by the embedded $\forall$-operator, as in (28b).

(28) Akiu mai-le [$_{DP}$ yiben [$_{CP}$ jieshao meige lyuyoudian] de shu]].
Akiu buy-Prf one introduce every tourist.attraction DE book

a.# 'For every tourist attraction x, Akiu has bought a book which introduces x.'
(#wide scope)
b. 'Akiu has bought a book which introduces every tourist attraction.'
(narrow scope)
阿Q買了[一本[介紹每個旅遊點]的書]。

As illustrated by (29a), the presence of the aspectual operator in (28) triggers strong existential quantification over *yiben ... shu* 'one ... book', which in turn intervenes the unselective binding relation between the matrix $\forall$-operator and the *mei*-NP, as in (29a). By contrast, the embedded $\forall$-operator forms a composite quantifier with the *mei*-NP entirely under the scope of the composite existential quantifier, as in (29b). Consequently, no intervention effect is incurred.[2]

---

[2] Here our analysis is in line with the aspectual licensing involved in secondary predication (cf. Huang 1987, Tsai 1994): As shown by the following contrast, only when the specificity-inducing specifier *yige* appears on the object indefinite, can the secondary predicate *hen congming* 'very intelligent' be licensed at the sentence-final position.
(i) a. * Akiu jiao-le xuesheng [hen congming].
Akiu teach-Prf student very intelligent
'Akiu has taught students, who are very intelligent.'
b. Akiu jiao-le **yige** xuesheng [hen congming].
Akiu teach-Prf one student very intelligent

(29) a.* Akiu $\forall_x$ [$_{vP}$ mai-**le**$_y$ [$_{DP}$ **yiben** [$_{CP}$ jieshao meige lyuyoudian(x)]de **shu(y)**]]

  b. Akiu mai-**le**$_y$ [$_{DP}$ **yiben** [$_{CP}$ $\forall_x$ [$_{vP}$ jieshao meige lyuyoudian(x)]de shu(y)]]

5. Further Consequences in Relation to Polarity Licensing

It is also worthwhile to note that there is a strong empirical correlation between universal quantification and polarity licensing with respect to their wide scope interpretations. As exemplified by (30), the polarity item *renhe zuozhe* 'any author' is licensed by the matrix scope marker *dou*, exhibiting no strong island effect.

(30) [$_{DP}$ [$_{CP}$ **renhe zuozhe(x)** qian-guo ming] de shu] **dou**$_x$ mai-de bucuo.
      any   author   sign-Exp name DE book all sell-DE well

  'For any author x, every book which x signed would sell well.'
  [[任何作者簽過名]的書]都賣得不錯。

On the other hand, the embedded object *rehe*-NP in (31) is subject to the licensing from the matrix negation, hence the wide scope reading of (31a), as illustrated in (32a). By contrast, it is impossible for typical existential closure to do the same trick on a polarity variable. The narrow scope reading of (32b) is therefore ruled out.[3]

(31) Akiu mei   mai [$_{DP}$ [$_{CP}$ jieshao renhe lyuyoudian] de shu]].
    Akiu not-Prf buy   introduce any   tourist.attraction DE book

  a. 'For any tourist attraction x, Akiu has not bought books which introduce x.'
      (wide scope)
  b.# 'Akiu has not bought a book which introduces any tourist attraction.'
      (#narrow scope)
      阿Q沒買[[介紹任何旅遊點]的書]。

(32) a. Akiu $\neg \exists_x$ [$_{vP}$ mai [$_{DP}$ [$_{CP}$ jieshao **renhe lyuyoudian**(x)] de shu]]

  b.* Akiu $\neg$ mai [$_{DP}$ [$_{CP}$ $\exists$ [$_{vP}$ jieshao **renhe lyuyoudian**(x)] de shu]]

The same account extends to the contrast between (33a,b), where the subject polarity item *renhe zuozhe* 'any author' can only be bound by the wide scope $\exists$-operator, as in (34a). The narrow scope interpretation is again blocked due to the non-applicability of existential closure on polarity variables, as in (34b).

      'Akiu has taught a student, who are very intelligent'
[3] Weak existential quantification triggered by negation (or any polarity licenser to that effect) takes the same scope as its host, and should not be confused with existential closure, which applies as a default/last-resort operator to close off unbound indefinites (cf. Heim 1982, Diesing 1991 and Tsai 2001, among others).

(33) Akiu   mei   mai [DP [CP renhe zuozhe   qian-guo ming] de shu].
     Akiu   not-Prf   buy   any   author   sign-Exp name DE book

   a. 'For any author x, Akiu has not bought a book which x signed.'
      (wide scope)
   b.# 'Akiu has not bought a book which any author signed.'
      (#narrow scope)
      阿Q沒買[[任何作者簽過名]的書]。

(34) a. Akiu $\neg\exists_x$ [vP mai [DP [CP **renhe zuozhe**(x) qian-guo ming] de shu]]

   b.* Akiu $\neg$ [vP mai[DP [CP **renhe zuozhe** $\exists$ [vP qian-guo ming] de shu]]]

Unsurprisingly, strong intervention effects again show up when we place a definite determiner such as *naben* 'that' on the top of a complex NP island that contains a *renhe*-NP, regardless of its syntactic position, as evidenced by (36-38).

(36)*[DP **naben** [CP renhe zuozhe qian-guo ming] de shu] dou   mai-de bucuo.
     that   any   author sign-Exp name DE book all   sell-DE well

   'For any author x, all the book which x signed would sell well.'
   * [那本[任何作者簽過名]的書]都賣得不錯。

(37)*Akiu   mei mai [DP **naben** [CP jieshao   renhe lyuyoudian]   de shu]].
   Akiu   not-Prf buy   that   introduce any   tourist.attraction DE book

   'For any tourist attraction x, Akiu has not bought the books which introduce x.'
   * 阿Q沒買[那本[介紹任何旅遊點]的書]。

(38)*Akiu   mei   mai [DP **naben** [CP renhe zuozhe   qian-guo ming] de shu].
   Akiu   not-Prf buy   that   any   author   sign-Exp name DE book

   'For any author x, Akiu has not bought the book which x signed.'
   * 阿Q沒買[那本[任何作者簽過名]的書]。

What is unexpected is the fact that the combo of an aspectual operator and the number specifier *yiben* 'one' does not block a wide scope construal triggered by the matrix negation, as evidenced by (39) and (40).

(39) Akiu   mei   mai [DP **yiben** [CP jieshao   renhe lyuyoudian]   de shu]].
   Akiu   not-Prf buy   that   introduce any   tourist.attraction DE book

   'For any tourist attraction x, Akiu has not bought a book which introduces x.'
   阿Q沒買[一本[介紹任何旅遊點]的書]。

(40) Akiu   mei   mai [_{DP} **yiben** [_{CP} renhe   zuozhe   qian-guo ming] de shu]**.**
      Akiu   not-Prf buy   that   any   author   sign-Exp name DE book

'For any author x, Akiu has not bought the book which x signed.'
阿Q沒買[一本[任何作者簽過名]的書]。

Here the polarity variable in question is unselectively bound by the wide scope ∃-operator under negation along with the head noun, as illustrated below.

(41) a.   Akiu ¬∃$_{x,y}$ [$_{vP}$ mai [$_{DP}$ **yiben** [$_{CP}$ jieshao   renhe   lyuyoudian(x)]   de **shu**(y)]]

      b.   Akiu ¬∃$_{x,y}$ [$_{vP}$ mai [$_{DP}$ **yiben** [$_{CP}$ renhe zuozhe(x) qian-guo ming] de **shu**(y)]]

Unlike the case with ∀-operator licensing, *renhe*-NPs and the indefinite NP *shu* 'book' share the same unselective binder. As a result, no minimality effect is incurred, and both sentences are fine.

6.   Concluding Remarks

To sum up, two generalizations can be drawn from our studies of Chinese wide scope quantification over universal and polarity expressions.

I.   Scope Isomorphism can be correlated with the robust analyticity of Chinese in both formal and typological terms: The design of a composite quantifier is essentially the product of unselective binding among discrete quantificational "parts" such as operators-in-situ (e.g., Q, *dou*, ∀, ∃, existential closure, etc.) and variables-in-situ (e.g. indefinite *wh's*, indefinite NPs, polarity items, etc.).

II.   Unselective binding with the scope marker *dou* and a variety of implicit operators is subject to strong intervention effects, but not strong island effects. The former is an instance of feature-based relativized minimality, while the latter is defined by dominating barriers in relation to subjacency (or the notion of phases in minimalist terms).

Hopefully, this study will present a clearer picture of the core typological features of Chinese quantificational constructions, which have been under constant scrutiny since Huang's (1982) seminal work on the LF construals of *wh's*-in-situ. It seems that Chinese implements the pairing of operators and variable in a true minimalist way, namely, merging them where they should be without resorting to syntactic movement or pied-ping. If our line of thinking is on the right track, then it may well be the case that the scope isomorphism and the wide scope universal/polarity construals are two facets of one phenomenon: That is, an operator-variable pair is constructed on a sentential scale thanks to the positive setting of the analyticity parameter in Huang's (2015) sense.

References

Aoun, J. and Y.-H. Audrey Li. 1989. Scope and Constituency. *Linguistic Inquiry* 20: 141–172.

Aoun, J. and Y.-H. Audrey Li. 1993a. On some Differences between Chinese and Japanese *Wh*-Elements. *Linguistic Inquiry* 20, 265–272.

Aoun, J. and Y.-H. Audrey Li. 1993b. *Syntax of Scope*. Cambridge, MA: MIT Press.

Beck, Sigrid. 1996. *Wh-constructions and transparent Logical Form*. PhD Dissertation, University of Tübingen.

Beck, Sigrid. 2006. Intervention Effects follow from Focus Interpretation. *Natural Language Semantics* 14: 1–56.

Beck, Sigrid, and Shin-Sook Kim. 1997. On wh- and operator scope in Korean. *Journal of East Asian Linguistics* 6: 339–384.

Cheng. Lisa L.-S. 1991. *On The Typology of Wh-questions*. Cambridge, MA: MIT Dissertation.

Cheng. Lisa L.-S. 1995. On *Dou*-Quantification. *Journal of East Asian Linguistics* 4: 197–234.

Cheng, Lisa and C.-T. James Huang. 1996. Two Types of Donkey Sentences. *Natural Language Semantics* 4: 121–163.

Cheng, Lisa and C.-T. James Huang. 2020. Revisiting Donkey Anaphora in Mandarin Chinese. *International Journal of Chinese Linguistics* 7.2: 167–186.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.

Higginbotham, James and Robert May. 1981. Questions, Quantifiers, and Crossing. *The Linguistic Review* 1: 41–79.

Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. PhD Dissertation, University of Massachusetts, Amherst.

Huang, C.-T. James. 1982. *Logical Relations in Chinese and The Theory of Grammar*. PhD Dissertation. Cambridge, MA: MIT Press.

Huang, C.-T. James. 1983. On the Representation of Scope in Chinese. *Journal of Chinese Linguistics* 11.1: 37–91.

Huang, C.-T. James. 1987. Existential Sentences in Chinese and (In)definiteness. In *The Representation of (In)definiteness*, (eds.) Reuland, Eric & Alice ter Meulen, 226–253. Cambridge, MA: MIT Press.

Huang, C.-T. James. 2015. On Syntactic Analyticity and Parametric Theory. In *Chinese Syntax in a Cross-linguistic Perspective*, (eds.) Li, Y.-H. Audrey, Andrew Simpson, and W.-T. Dylan Tsai, 1–48. New York: Oxford University Press.

Huang, C.-T. James. 1988. *Shuo Shi he You* [On *Be* and *Have* in Chinese]. *The Bulletin of the Institute of History and Philology* 59: 43–64.

Kuroda, S.-Y. 1965. *Generative Grammatical Studies in the Japanese Language*. MIT: PhD dissertation.

Li, Y.-H. Audrey. 1992. Indefinite *Wh* in Mandarin Chinese. *Journal of East Asian Linguistics* 1: 125-155.

Lin, Jo-Wang. 1998. Distributivity in Chinese and its implications. *Natural Language Semantics* 6: 201–243.

Lin, Jo-Wang. 2004. Choice Functions and Scope of Existential Polarity *Wh*-phrases. *Linguistics and Philosophy* 27.4: 451–491.

Liu, Mingming, 2021. A Pragmatic Explanation of the *Mei-dou* Co-occurrence in Mandarin. *Journal of East Asian Linguistics* 30.3: 277–316.

Pesetsky, David. 2000. *Phrasal Movement and its Kin*. Cambridge, MA: MIT Press.

Reinhart, Tanya. 1997. Quantifier Scope – How Labor is Divided between QR and Choice Functions. *Linguistics and Philosophy* 20: 335–397.

Reinhart, Tanya. 1998. *Wh*-in-situ in the Framework of the Minimalist Program. *Natural*

Language Semantics 6: 29–56.

Rizzi, Luigi. 2004. Locality and the Left Periphery. In *Structures and Beyond: The Cartography of Syntactic Structures, vol. 3*, (ed.) Adriana Belletti, 223-251. New York: Oxford University Press.

Tsai, W.-T. Dylan. 1994. *On Economizing the Theory of A-Bar Dependencies*. MIT: PhD dissertation.

Tsai, Wei-Tien Dylan. 1999. On Lexical Courtesy. *Journal of East Asian Linguistics* 8: 39–73.

Tsai, Wei-Tien Dylan. 2001. On Subject Specificity and Theory of Syntax-Semantics Interface. *Journal of East Asian Linguistics* 10, 129–168.

Tsai, Wei-Tien Dylan. 2003a. Three Types of Existential Quantification in Chinese. In *Functional Structure(s), Form and Interpretation: Perspectives from Asian Languages*, (eds.) Li, Audrey and Andrew Simpson, 161–179, Routledge Curzon.

Tsai, Wei-Tien Dylan. 2003b. Lexical Courtesy Revisited: Evidence from Tsou and Seediq *Wh*-Constructions. *Gengo Kenkyu [Journal of the Linguistic Society of Japan]* 123: 331–361.

Tsai, Wei-Tien Dylan. 2008. Left Periphery and *How-Why* Alternations. *Journal of East Asian Linguistics* 17: 83-115.

Tsai, W.-T. Dylan and Zongxian Li. 2016. Tan Hanyu Jiaodiande Yunlyu Jizhi: Jufa-Yunlyu Jiamiande Gean Yanjiu [On the Prosodic Nature of Chinese Foci: A Case Study of the Syntax-Prosody Interface]. *Prosodic Studies* 1: 98–112.

Tsai, W.-T. Dylan and Barry C.-Y. Yang. 2002. On Licensing Universal Quantification in Mandarin Chinese. Paper presented in the 11th Annual Meeting of International Association of Chinese Linguistics, Aichi Prefectural University, Nagoya, Japan.

Yang, Barry C.-Y. 2005. Subject Specificity, Predicate Distributivity, and Scope Interpretation in Mandarin Chinese. *Taiwan Journal of Linguistics* 3.1: 133–173.

Yang, Barry C.-Y. 2012. Intervention Effects and Wh-construal. *Journal of East Asian Linguistics* 21: 43–87.