Two Sources for Sluicing in Mandarin Chinese*

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Abstract

The purpose of this paper is to argue that we need to posit two distinct types of derivation for sluicing in Mandarin Chinse: one is a *wh*-movement and deletion analysis proposed by Wang and Wu's (2006) and the other is a null *pro*-form analysis proposed by Wei's (2011).   I will show that a given sluicing in Mandarin Chinese will be grammatical if there is at least one way of deriving it which satisfies all relevant conditions, whereas it will be ungrammatical if neither of the two derivations yield a convergent outcome.

1.   Introduction

The purpose of this paper is to consider an elliptical interrogative sentence where only a *wh*-phrase is overtly pronounced.   This type of ellipsis is called sluicing, as exemplified by the following sentences in English:

(1) a.   John bought something for his girlfriend, but he didn't tell us what.

   b.   If Mary went somewhere for lunch, and her husband must know where.

<div align="right">(Adams and Tomioka (2012: 219))</div>

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In these sentences, the *wh*-phrases *what* and *where* correspond to the overt phrases *something* and *somewhere* respectively.   There are similar phenomena in Mandarin Chinese (henceforth, MC), as illustrated in (2):

(2) a. Lisi chuqu   yuehui; ta   mama   xiang zhidao (shi)   zai
       Lisi go-out date   3sg   mother want   know COP   at
       nali   /han   shei
       where with   who
       'Lisi went out for a date; her mother wondered where/with whom.'

   b. Lisi mai le   yiyang dongxi gei   mouren, dan wo   bu
       Lisi buy ASP one-CL thing   gives someone but 1SG   not
       zhidao shi   shei/ shenme.
       know   COP who   what
       'Lisi bought something for someone, but I don't know who/what.'

                                        (Adams and Tomioka (2012: 219))

    There have been proposed two types of approach to sluicing in MC.   The one is to assume that like English, sluicing in MC is also derived by *wh*-movement and deletion.   For example, Wang and Wu (2006) claim that a *wh*-phrase undergoes focus-movement to spec of Focus Phrase (FocP), and then the TP including the trace of a moved element is deleted.   This analysis gives (2a) the following structure where the portion of affected by deletion is represented by the strikethrough text:

(3)   Lisi chuqu yuehui; ta mama xiang zhidao [(shi) [$_{FocP}$ zai nali/han shei$_1$ [$_{TP}$ ~~Lisi chuqu yuehui *t*$_1$~~]]]

The other approach assumes that (2a) is the "pseudo-sluicing", as illustrated in (4):

(4)   Lisi chuqu yuehui; ta mama xiang zhidao [*pro* (shi) zai nali/han shei]

In (4), the sluiced clause has a phonologically silent pronominal subject *pro* followed by the copula *shi* and the *wh*-remnant.   The *pro* in the subject position takes *Lisi chuqu yuehui* 'Lisi goes out date' as the antecedent from the first conjunct, and the *wh*-remnants *zai nali/han shei* do not involve any movements.   This kind of approach, proposed by Wei (2004, 2011), Adams (2004), and Adams and Tomioka (2012), is referred as the "pseudo-sluicing" analysis.

Given these analyses of sluicing in MC, we might wonder whether we need to assume both of them, or we only have to adopt one of them in explaining sluicing in MC.   In this paper, I will claim that these two approaches are necessary for analyzing sluicing in MC, and that sluicing in MC are structurally ambiguous and can have either a derivation involving wh-movement or a null *pro*-form.   I will provide an argument for this hybrid analysis by showing that a given sluicing in Mandarin Chinese will be grammatical if there is at least one way of deriving it which satisfies all relevant conditions, whereas it will be ungrammatical if neither of the two derivations yield a convergent outcome.

The organization of this paper is as follows.   In section 2, I will review two types of analysis of sluicing in MC: Wang and Wu's (2006) *wh*-movement and deletion analysis and Wei's (2011) pseudo-sluicing analysis.   In section 3, I will show that a given sluicing in MC will be ungrammatical if neither of the two analyses yield a convergent outcome.   Section 4 is a conclusion.

2.   Two Analyses for Sluicing in Mandarin Chinese

In this section, I will overview the two types of previous researches of sluicing in MC.   One type of sluicing is Wang and Wu's (2006) the movement and deletion approach.   Based on Merchant's Focus condition on IP-ellipsis and e-GIVENness, I will present how their analysis derives sluicing in MC.   The other type is Wei's

(2011) pseudo-sluicing approach. Instead of movement and deletion, he assumes the *pro* in the subject position to take an antecedent from the first conjunct. I will show that these two types of analyses not only have their own strong empirical motivations, but also have to complement one another in the different environments.

2.1. A *Wh*-movement and deletion analysis

English and MC are different in terms of *wh*-movement. In English, *wh*-phrases undergo the overt *wh*-movement to the spec CP. On the other hand, MC is one of *wh*-in-situ languages where *wh*-phrases do not move. In spite of this dissimilarity, Wang and Wu (2006) follow Huang (1982) in assuming that sluicing in MC is in line with English, and go on to propose that the *wh*-phrase moves out of the sluiced clause before TP is elided. Moreover, adopting Rizzi's (1997) assumption that *wh*-phrases have to agree with the *wh* features or focus features, they suppose that *wh*-phrases move from based-generated positions to Spec of Focus Projection (FocP) before deleting of TP.

Some support for their movement analysis comes from the idiom chunk interpretation in the following sentence:

(5)   Speaker A: Lisi changchang [VP chi [DP   mouren de

                    Lisi often   eat   someone GEN

                    cu]]

                    vinegar

                    '(lit.) Lisi is often jealous of who(m)?'

       Speaker B: Dui,   dan wo   bu   zhidao (shi) [DP *shei de*

                    Yeah, but 1SG NEG know   SHI   who GEN

                    cu]

                    vinegar

                    'Yeah, but I don't know who.'

                                          (Song and Yoshida (2017: 484))

Speaker A's utterance involves the verb phrase *chi mouren de cu* which is interpreted idiomatically as "jealous of someone".   The same idiomatic interpretation can be seen in Speaker B's elliptical sentence.   This sentence has the following structure under the movement and deletion approach:

(6)   ....dan wo bu zhidao [CP (shi) [FocP *shei de cu*]$_1$ Foc [TP ~~Lisi changchang~~

       ~~chi *t*$_1$~~]]]

In (6), the object of verb *shei de cu* 'who's vinegar' moves from the base-generated position to Spec of FocP position, and then the TP is elided.   The deleted TP involves the verb phrase *chi shei de cu* 'eat who's vinegar' which can be interpreted as *be jealous of someone* idiomatically.   Accordingly, the movement and deletion approach accounts for the idiomatic interpretation of speaker B's utterance in (5).

       In contrast, the pseudo-sluicing analysis cannot explain the idiomatic interpretation.   This analysis gives speaker B's elliptical sentence the following structure:

(7)　....dan wo bu zhidao [CP *pro* (shi) [DP *shei de cu*]]

In (7), the *pro* takes *Lisi changchang chi* 'Lisi often eat' as its antecedent from the first conjunct.　But, the DP *shei de cu* is not the complement of the verb *chi* so that they do not form the constituency.　Thus, the pseudo-sluicing analysis cannot capture the idiomatic interpretation of speaker B's utterance in (5).

　　　Furthermore, the movement and deletion approach to sluicing in MC is also supported by the following sentence:

(8)　zheben shu　Laowu　zhidao ta zainali　kanguo, er　naben shu　Lisi

　　　This　　book Laowu　know　he where　saw　　and that　　book Lisi

　　　ye　　zhidao　*zainali.*

　　　also　know　　where

　　　Lit. 'This book Laowu knows where he saw, and that book Lisi knows where too.'

　　　　　　　　　　　　　　　　　　　　　　　　(Wang and Wu (2006:382))

In (8), *zheben shu* 'this book' and *naben shu* 'that book' undergo topicalization so that they have the contrastive relation with each other.　And, the embedded clause in the second conjunct is sluiced with the wh-phrase *zainali* as the remnant.　This sentence has the following structure under the movement and deletion analysis:

(9)　….er naben shu$_j$ Lisi ye zhidao [CP (shi) [FocP *zainali$_k$* Foc [TP ~~ta~~ t_k ~~kaguo~~ t_j]]].

In (9), the object *naben shu* 'that book' within the embedded clause is topicalized into the matrix clause in the sluiced clause.　Moreover, the *wh*-remnant *zainali* 'where' undergoes the focus movement to the spec of FocP.　And then, the TP which

is included the trace of moved elements is deleted. Thus, the movement and deletion approach can give (8) the appropriate structure.

On the other hand, sentence (8) has the following structure under the pseudo-sluicing approach:

(10)   *….er naben shu Lisi ye zhidao[CP *pro* shi *zainali*].

In (10), the *pro* takes *ta kanguo* 'he saw' as its antecedent from the matrix clause, and the *wh*-remnant *zainali* 'where' is based-generated. However, the object *naben shu* 'that book' does not have its trace and hence cannot be given any appropriate interpretation. Therefore, the pseudo-sluicing approach cannot explain the interpretation of sentence (8) that involves topicalization.

2.2. A Pseudo-sluicing Analysis

Wei (2004, 2011) and Adams and Tomioka (2012) claim that sluicing in MC is not derived by the movement and deletion, but that it is a kind of pseudo-sluicing which has an empty *pro*-form *pro* in an elided clause. According to Wei, there are two kinds of *pro*: one is the nominal *pro* which needs a syntactic antecedent, and the other is event *pro* which refers to sematic argument that modify event predicate in an antecedent clause. Unlike the movement and deletion approach, the pseudo-sluicing approach to sluicing in MC assumes that a *wh*-remnant is base-generated at a pronounced place. Then, this approach predicts that sluicing in MC does not show the Left Branch Extraction (hence forth LBE) effect.

Wei (2011) provides supporting arguments for this prediction. Consider the Left Branch Extraction without overt correlate as shown in (11):

(11) Zhangsan mai-le   che, dan wo   bu zhidao [CP *pro* (shi) *duo-*
      Zhangsan buy-ASP car   but   I   not know   be how-
      xin(-de)]
      new-De
      '(lit.) Zhangsan bought a car, but I don't know how new it was.'

(Wei (2011: 259))

The movement and deletion analysis cannot account for the grammaticality of (11). This analysis gives sentence (11) the following structure:

(12)   *….dan   wo   bu zhidao [CP (shi) [FocP *duo-xin(-de)*ⱼ Foc [TP ~~Zhangsan mail-le tⱼ che~~]]].

In (12), the *wh*-remnant *duo-xin (de)* 'how new-De' the leftmost of the noun phrase moves from the sluiced clause to the CP, and the TP containing its trace is elided. However, this movement violates the Left Branch Condition (Ross 1967, 1968). Furthermore, the counterpart in English sluices is also unacceptable, as shown in (13):

(13)   *She bought a car, but I don't know [CP *how big*ᵢ [TP ~~she bought a tᵢ car~~]].

(Merchant (2001: 176))

In (13), the *wh*-remnant *how big* is extracted from the noun phrase, which undergoes *wh*-movement from the sluiced clause to CP, and the TP including the trace is elided.   Merchant (2001) claims that structure (13) does not meet the e-GIVENness Condition on deletion because the elided TP is not presupposed by the antecedent clause.   If (13) violates the e-GIVENness Condition, (12) must violate

the same condition too.   Accordingly, the movement and deletion analysis cannot account for the grammaticality of (11).

On the other hand, the pseudo-sluicing analysis gives sentence (11) the following structure:

(14)   ….dan wo bu zhidao [$_{CP}$ *pro* (shi) *duo-xin(-de)*]

In (14), the *pro* occurs in the subject position, and it takes the noun phrase *che* 'a car' as its antecedent from the first conjunct.   The *wh*-remnant *duo-xin (de)* 'how new-De' does not undergo any movements, and it does not violate the Left Branch Condition.   Wei (2011) claims that the counterpart in English sluices is acceptable, as illustrated in (15):

(15)   She bought a car, but I don't know how big it is.

(Merchant (2001: 177))

In (15), there is no movement, but the expletive subject *it* in the second conjunct refers to *a car* as its antecedent in the first conjunct.   The *wh*-remnant how *big* moves to the CP in order to make a question form.   Thus, the pseudo-sluicing in English supports the pseudo-sluicing approach to sluicing in MC.

The same argument holds of the following sentence:

(16)   Zhangsan mai-le   yi-liang *JIU* che, dan wo   bu   zhidao [[$_{CP}$ *pro*
        Zhangsan buy-Asp one-Cl   old car,   but I   not know
        (shi) *duo-DA*].
        be   how-big
        '(lit.) Zhangsan bought an old car, but I don't know how big.'

(Wei (2011: 260))

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The pseudo-sluicing analysis gives sentence (16) the following structure:

> (17)   ….dan wo bu zhidao [CP *pro* (shi) *duo-DA*].

In (17), the *pro* in subject position takes the noun phrase *yi-liang JIU che* 'an old car' as its antecedent from the first conjunct.   Since the *wh*-phrase *duo-DA* 'how-big' is based-generated, it does not violate the Left Branch Extraction condition. Actually, English has the corresponding sentence to (17):

> (18)   She bought an OLD car, but I don't know how BIG it is.

In (18), the expletive subject *it* in the second conjunct refers to *an OLD car* as its antecedent in the first conjunct.   In this regard, sentence (18) can be interpreted as *but I don't know how BIG an OLD car is.*   Therefore, the pseudo-sluicing in English in (18) can be seen as one piece of supporting evidence for the pseudo-sluicing approach to sluicing in MC.

In contrast, the movement and deletion analysis cannot account for the grammaticality of (16).   According to this analysis, sentence (16) has the following structure:

> (19)   *….dan wo bu zhidao [CP (shi) [FocP *duo-DA$_j$* Foc [TP ~~Zhangsan mai-le yi-liang t_j che~~]]].

In (19), the *wh*-remnant *duo-DA* 'how BIG' undergoes the focus movement to the CP, and then the TP containing its trace is elided.   This kind of movement violates the Left Branch Condition.   Furthermore, the counterpart in English sluices is also unacceptable, as shown in (20):

(20)　　*She bought an *OLD* car, but I don't know [$_{CP}$ *how BIG$_i$*. [$_{TP}$ ~~she bought~~
　　　　~~a t_i car~~]]

(Merchant (2001:180))

In (20), the *wh*-remnant *how BIG* moves from the sluiced clause to CP.　After the
movement, the TP containing the trace of *BIG* is deleted.　Merchant (2001) claims
that (20) violates the e-GIVENness Condition: the attributive adjectival phrase *BIG*
is not parallel to the attributive adjectival phrase *OLD* in the first conjunct.　Then,
the elided elements *a t car* is not the e-GIVEN, so it cannot be deleted.　If (20)
violates the e-GIVENness Condition, (19) must violate the same condition too.
Accordingly, the movement and deletion analysis cannot account for the
grammaticality of (16).

2.3.　Summary

　　　　Thus far, we have seen two approaches to sluicing in MC. One is Wang and
Wu's (2006) wh-movement and deletion approach, which accounts for the fact that
sluicing in MC has an idiom chunk interpretation and allows a topic phrase to co-
occur with a *wh*-remnant.　The other is Wei's (2011) pseudo-sluicing approach,
which explains that sluicing in MC does not show the Left Branch Extraction
effect. These two approaches not only have their own strong supporting evidence,
but also complement one another in the different environment.

3.　Further Arguments for the Hybrid Analysis

　　　　In this section, I will provide further arguments for the two analyses by
showing that a given sluicing in MC will be ungrammatical if neither of the two
analyses yield a convergent outcome.　Notice that a given sluicing must be
derived by *wh*-movement and deletion if it involves a topic-remnant in addition to
a *wh*-remnant, and that a given sluicing must be derived by a null *pro*-form if it has

a *wh*-remnant corresponding to a degree modifier of a noun phrase in an antecedent clause.   Then, the hybrid analysis based upon these two derivations predicts that a given sluicing in MC will be ungrammatical of it has both a topic-remnant and a corresponding *wh*-remnant to a degree modifier of a noun phrase in an antecedent clause.   This is because this kind of sluicing cannot be derived by either *wh*-movement and deletion or a null *pro*-form.   I will argue that this prediction is empirically correct by providing new data about sluicing in MC.

First, let us consider the following unacceptable sluicing in MC:

(21)   *Zhe-ben shu   Lisi   shou you yi-ge   gongsi   chuban-le,
         This-CL book   Lisi   say   have one-CL company publish-LE
         dan   na-ben shu   Lisi   bu   zhidao   (shi) *duo   da   (de)*
         but   that-CL book Lisi   not know   be   how big   DE
         'Lit. This book Lisi said that a company published, but that book, Lisi
         does not know *how big*.'

In (21), *zhe-ben shu* 'this book' and *na-ben shu* 'that book' move to the clause-initial position by topicalization.   Then, they have the contrastive relation with each other.   And, the embedded clause in the second conjunct is sluiced with the *wh*-phrase *duo da (de)* 'how big' that corresponds to a degree modifier of a topicalized phrase.   Topicalization requires (21) to have the following structure:

(22)   *....dan na-ben shu_j Lisi bu zhidao [CP (shi) [FocP *duo da de_k* [TP ~~Lisi said that a company published~~ t_k t_j]]].

In (22), the object *na-ben shu* 'that book' is topicalized into the front position of the sluiced clause.   And the *wh*-remnant *duo da (de)* 'how big DE' is extracted out of the noun phrase in the sluiced clause.   In this case, the movement of the *wh*-remnant

duo da (de) 'how big DE' violates the Left Branch Extraction condition.   Moreover, structure (22) also violates Merchant's e-GIVENness condition: the *duo da (de)* 'how big DE' in the sluiced clause does not have any corresponding phrase in the antecedent clause.   Accordingly, (21) is illegitimate.

To avoid the violation of the Left Branch Extraction condition, (21) must have the following structure:

(23)   *....dan na-ben shu Lisi bu zhidao [$_{CP}$ *pro* (shi) *duo da (de)*]

In (23), the *pro* takes *yi-ge gongsi* 'a company' as its antecedent.   The *wh*-remnant *duo da (de)* 'how big DE' does not undergo any movements, and it does not violate the Left Branch Condition.   Moreover, (23) does not contain any elided structure and hence are not subject to violate Merchant's e-GIVENness condition.   However, the object *na-ben shu* 'that book' does not have its trace and hence cannot be given any appropriate interpretation.   Therefore, (23) is not legitimate either.   Thus, neither the movement and deletion analysis nor the pseudo-sluicing one can provide an appropriate structure to (21) and hence sentence (21) is ungrammatical.

The same argument holds of the following sentence:

(24)   *Wele Lisi, Zhangsan mai-le   yi-liang *JIU* che,
       For Lisi Zhangsan buy-LE one-CL   old car
    dan   wele Wangwu, wo bu zhidao (shi) *duo DA (de)*
    but   for Wangwu   I   not know   be how big DE
    'Lit. For Lisi, Zhangsan bought an old car, but for Wangwu, I do not
    know *how big*.'

The movement and deletion approach and the pseudo-sluicing approach give sentence (24) the following structures in (25a,b) respectively:

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(25) a. *dan wele Wangwu$_j$, wo bu zhidao [$_{CP}$(shi) [$_{FocP}$ *duo DA (de)$_k$*

   $_{Foc}$[~~Zhangsan mai-le yi-liang t_k che t_j~~]]]

   b. *dan wele Wangwu, wo bu zhidao [$_{CP}$ *pro* (shi) *duo DA (de)*]

In (25a), the preposition *wele Wangwu* 'for Wangwu' moves into the initial position of the sluiced clause, and the *wh*-remnant *duo DA (de)* 'how BIG DE' moves out of the NP through the focus movement. After these two phrases have undergone movement, the TP, which contains the trace of the moved elements, is elided. However, the movement of the *wh*-remnant violates the Left Branch Extraction condition. Moreover, structure (25a) violates Merchant's e-GIVENness condition too because the attributive adjectival phrases *yi-liang JIU che* 'an old car' in the first conjunct are not matched to *duo DA (de)* 'how BIG DE' in the sluiced clause. Therefore, structure (25a) is ill-formed.

Next, let us turn to structure (25b). In this structure, the *pro* takes the *che* 'a car' in the first conjunct as its antecedent. In this case, the *wh*-remnant *duo DA (de)* 'how BIG DE' does not take any movements. Thus, structure (25b) does not involve any violation of the Left Branch Extraction condition. Moreover, this structure does not undergo deletion and hence does not need to satisfy Merchant's e-GIVENness condition. However, structure (25b) does not contain any trace of topicalization, the topicalized elements *Wele Wangwu* 'for Wangwu' cannot be interpreted. Accordingly, structure (25b) is illegitimate. Thus, neither the movement and deletion analysis nor the pseudo-sluicing one can provide an appropriate structure to (24) and hence sentence (24) is ungrammatical.

Finally, let us consider the following ungrammatical sluicing in MC:

(26) *Zhe-ben shu$_i$ Lisi shou you yi-ge   yingwen hen liuli   de

This-CL book Lisi say   have one-CL   English   very fluent de

ren   xie   de dan na-ben shu$_j$ Lisi bu zhidao (shi) *duo*

person wrote DE but   that-CL book Lisi not know   be   how

liuli   (de)]

fluent DE

'Lit. This book Lisi said that a person who speaks fluent English wrote,

but that book, Lisi does not know *how fluent*.'

The movement and deletion approach and the pseudo-sluicing approach give sentence (26) the following structures in (27a,b) respectively:

(27) a. *dan na-ben shu$_j$ Lisi bu zhidao [$_{CP}$ (shi) [$_{FocP}$ *duo liuli (de)$_k$* Foc[$_{TP}$ ~~Lisi shou you yi-ge yingwen t_k ren xie de t_j~~]]]

      b. *dan na-ben shu$_j$ Lisi bu zhidao[$_{CP}$ *pro* (shi) *duo liuli (de)*]

In (27a), the object *na-ben shu* 'that book' in the embedded clause is topicalized into the top position of the matric clause of the first conjunct.   And the *wh*-remnant *duo liuli (de)* 'how fluent DE' undergoes focus movement.   After these movements have applied, the embedded clause of the second conjunct are deleted.   The output is illegitimate because the movement of the *wh*-remnant *duo liuli (de)* 'how fluent DE' not only violates the Left Branch Extraction condition, but also the complex noun phrase island restriction.

Next, let us turn to (27b).   In this structure, the *pro* takes *you yi-ge yingwen hen liuli de ren xie de* 'a person who speaks fluent English wrote' as its antecedent. Since this structure does not involve any movement and hence there is no violation of the Left Branch Extraction condition and the complex noun phrase island restriction.   However, the structure does not contain any trace of the topicalized

phrase *na-ben shu* 'that book. Accordingly, the topicalized phrase is not appropriately interpreted so that structure (27b) is ill-formed. Therefore, sentence (26) is ungrammatical.

To summarize this section, I have provided further arguments for the hybrid analysis based upon the previous two analyses: the *wh*-movement and deletion analysis and the pseudo-sluicing one. The former analysis is necessary for explaining a sluicing in MC that has not only a *wh*-remnant in an embedded clause, but also a topicalized-remnant in a matrix clause. On the other hand, the latter analysis is required to account for a sluicing in MC that has a *wh*-remnant corresponding to a degree modifier of a noun phrase in an antecedent clause. Then, these two analyses predict that if a given sluicing in MC has a corresponding *wh*-remnant to a degree modifier of a noun phrase and a topicalized-remnant, the sluicing is ungrammatical because it must have two structures that are incompatible with each other. I have argued that this prediction is borne out by examining relevant data about sluicing in MC.

4.   Conclusions

In this paper, I have reviewed two different approaches to sluicing in MC, the movement and deletion analysis proposed by Wang and Wu (2006) and the pseudo-sluicing one proposed by Wei (2004, 2011). I have argued that these two approaches not only have their own strong supporting evidence, but also complement one another in the different environments. I have also provided further an argument for these two analyses, by showing that a given sluicing in Mandarin Chinese will be ungrammatical if neither of the two derivations yield a convergent outcome.

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