

On Sluicing in Mandarin Chinese¹

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Abstract

Sluicing, the construction of a *wh*-phrase followed by an (empty) elliptical part, has been an intricate issue discussed since Ross (1969). Most literature states that the elliptical part is an IP, and the *wh*-phrase is immune from ellipsis since it either *wh*-moves (PF Deletion, cf. Takahashi 1994, Lasnik 1999) or is base-generated in [Spec, CP] (LF Copying, cf. Chung et al 1995).

I follow the PF Deletion approach which requires that *wh*-movement take place overtly prior to IP ellipsis at PF. However, it is well known that Chinese lacks overt *wh*-movement. For Sluicing, I propose that *wh*-phrases in Chinese utilize Focus Movement, moving into the Spec of Focus Phrase (FP) (cf. Rizzi 1997). Syntactically, focus movement presumes the new functional projection FP and it is the functional head F that licenses IP ellipsis (cf. Lobeck 1995). Morphologically, *wh*-phrases in Chinese, as proposed by Li (1992) and Tsai (1999), differ from those in English in that *wh*-phrases in Chinese are not operators that move. Semantically, the sluices usually contrast with their antecedents and the focus always falls on the *wh*-phrases. (cf. Merchant 1999)

Further evidence comes from the investigation of the multiple *wh*-construction in Chinese, showing that when a *wh*-phrase in Chinese moves overtly, it is never located in [Spec, CP]. This supports my focus movement analysis. The final part of this paper focuses on *shi* support found in Chinese Sluicing. *Shi* support also plays a crucial role to prove that the *wh*-phrase in Chinese Sluicing in fact undergoes focus movement.

All in all, I demonstrate that a *wh*-phrase in Chinese undergoes focus movement prior to IP ellipsis when Sluicing applies, and this approach does not only capture the configuration of syntax but also semantics and morphology.

1. Introduction

Sluicing is an elliptical construction that involves a remnant *wh*-phrase followed by an empty constituent. To my best knowledge, Ross (1969) is the first one who has discussed Sluicing. (1a) is a typical sentence related with (1b) by Sluicing.

- (1) a. Mary went out with somebody --- guess who (with).
b. Mary went out with somebody --- guess who she went out with *t*.

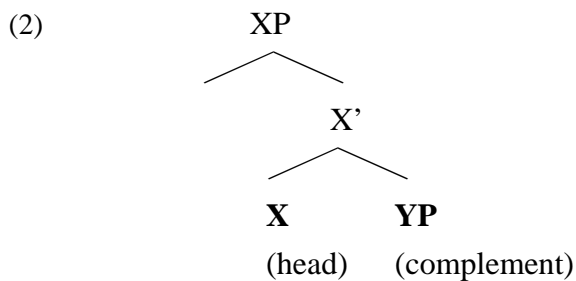
In the standard assumption, the elliptical constituent is an IP and the remnant *wh*-phrase is immune from ellipsis since it has either undergone *wh*-movement or been base-generated in [Spec, CP]. The former argues that there is a later deletion operation that affects an IP after *wh*-movement takes place, whereas the latter alternatively states

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that the remnant *wh*-phrase is base-generated in [Spec, CP] and its interpretation relies on a special copying rule that operates in the covert syntax (Logical Form, henceforth LF). Apart from the comparison between the theories, Sluicing is undoubtedly related with IP ellipsis.

2. Licensing Condition

Saito and Murasugi (1990) reanalyze N'-Deletion as NP-Deletion under the DP hypothesis. They, extending the hypothesis of Zagana (1982), argue that deletion (or ellipsis) can apply only when an elliptical part is licensed by a certain kind of functional category. That is licensing condition and its configuration is satisfied through the notion of Government, which can be simplified as a head-complement relation, as shown in (2), where *X* is a head and *YP* a complement:



So deletion is possible only when an elided part is a complement of a functional head. They thus conclude that the feasibility of VP- and NP-deletion relies on the licensing (i.e. proper Government) of functional heads I and D respectively. This leads Lobeck (1990, 1995), by investigating more elliptical constructions including Sluicing, to have a unified conclusion that elided constituent must be licensed by a functional head that exhibits Strong Agreement. Strong Agreement requires a functional head to have an agreement relation with its Specifier. For examples, a [+*wh*] C always agrees with the *wh*-phrase in its Specifier position. Although head C, as an agreeing head, is covert, it is still eligible to license and identify ellipsis. An elliptical construction licensed by C is typical of Sluicing. Summarizing so far, ellipsis can only take place when an elliptical constituent is licensed by a functional head that agrees with its Spec.

(3)

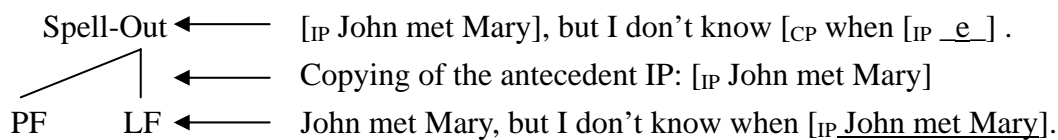
Heads	Agreeing	Instances
C	[+ <i>wh</i>] C	IP Ellipsis (Sluicing)
I	tensed I	VP Ellipsis
D	genitive 's	NP Ellipsis

3. LF Copying versus PF Deletion

3.1. LF Copying Theory

Chung, Ladusaw, McCloskey (1995, henceforth CLM 1995) argue that the remnant *wh*-phrase in Sluicing is base-generated in [Spec, CP] and then certain copying rule which copies the antecedent to the position of empty IP applies at LF, in order to obtain an interpretation for the missing part. That is a typical LF Copying analysis and can be illustrated as follows:

(4) LF Copying Theory



The copying rule is necessary; otherwise the sentence would violate the ban on vacuous quantification for the *wh*-operator would not have any variable to bind. This copying operation is termed as IP recycling and there are still two more operations, sprouting and merger. Sprouting creates a syntactic projection in the empty IP for the *wh*-phrase to bind when the antecedent IP contains an implicit argument and merger coindexes the inner antecedent and the *wh*-phrase. These operations constitute the core machinery in their analysis. Among them, sprouting is optional and applies only when the antecedent contains an implicit argument, as shown in (5):

(5) Joan ate dinner but I don't know with whom.

(CLM 1995:(15))

Merger comes to apply to coindex those which need to have the semantic relation with others after IP recycling takes place. As shown in (6), those must be coindexed are: *with* and *with*, *whom* and *someone*.

(6) [CP [with^x whom^y]_i C^y[+Q] [IP Joan ate dinner [with^x someone^y]_i]]

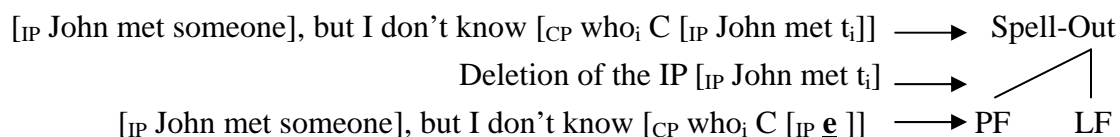
Following Kamp-Heim's theory of indefinites, "indefinites are interpreted as 'restricted free variable' available for discourse-level assignment of a referent or for binding by some other operator." (CLM 1995:251), CLM further assume that *wh*-pronouns and all weak DP's can be interpreted in the same way. Therefore, *someone*, as a variable, is bound by the Q-operator in C; at the same time, *someone* also coindexes with the *wh*-phrase *whom*, as the co-superscript shows.

3.2. PF Deletion Theory

The approach with which Ross (1969) analyzes Sluicing is based on that a deletion operation works to eliminate the phonetic output of the so-called equi-IP. Wasow (1972),

who cites a 1971 lecture by Chomsky, reports that Chomsky “suggests that VP deletion and Sluicing can be formulated as very late rules which delete unstressed strings.” Although the split of PF and LF is theorized later in Government and Binding Theory (henceforth GB), this is in essence the very beginning of a PF deletion-based analysis. In a more recent work by Tancredi (1992) as well as Chomsky & Lasnik (1993, reprinted as Chomsky 1995), they suggest that there be two ways to deal with ellipsis. The first one involves a special copying operation at LF, that is, LF copying theory of ellipsis. However, a simple alternative is to deny that an elliptical sentence is as the way it is in the surface. That is, an elliptical sentence was first fully spelled-out on the surface and then an operation at PF applies to have the IP elided, resulting in inaudibility of the elided part. Later in discussion of copy theory of movement and the deletion of trace at PF, Chomsky (1993, 1995:202) states that the PF deletion operation is very likely a sub case of a broader principle that applies in ellipsis. The notion of PF deletion theory is illustrated as follows:

(7) PF Deletion Theory



Note that this analysis relies crucially on the fact that overt *wh*-movement has taken place in order to create an ellipsis licensing configuration. Theoretically speaking, there are two reasons to support the idea that the ellipsis licensing configuration must be created in overt rather than covert syntax. First, the level of PF, being after the split of PF and LF, can only accept input from Spell-Out (i.e. overt syntax). Second, following the theory of LF-movement advocated by Chomsky (1995), movement is triggered by the need of formal features to be checked, all else being equal, only formal features move. That is to say, when movement is overt, movement pied-pipes the entire constituent to move; when covert, only features move. So it is difficult to see how covert movement can rescue the *wh*-phrase from being deleted. In other words, an ellipsis licensing configuration cannot be created in covert syntax. That is also the reason why Lasnik (1999:159) rejects LF copying theory of ellipsis.

Takahashi (1994) analyzes Sluicing in Japanese based on the PF deletion account. Interestingly, Japanese is a *wh*-in-situ language, which means the *wh*-phrase does not undergo overt *wh*-movement. Instead, as proposed by Watanabe (1993), it stays in-situ and acquires quantificational force from an operator merged in [Spec, DP]. Then the implicit operator undergoes syntactic *wh*-movement to [Spec, CP]. Beyond Watanabe's insight, Takahashi (1994) assumes that while syntactic *wh*-movement is obligatory, either the null operator or the entire *wh*-phrase undergoes movement to [Spec, CP] in Japanese. However, only the latter case in which the entire *wh*-phrase moves can

account for the existence of the *wh*-remnant in Japanese Sluicing, while the null operator hypothesis cannot, as in (8):

- (8) a. Mary-ga [_{CP} *OP*_i [_{IP} John-ga [_{DP} *t*_i nani]-o katta ka siritagatteiru.
 -Nom -Nom what-Acc bought Q want-to-know
 ‘Mary wants to know what John bought.’
- b. Boku-mo [_{CP} *OP*_i [_{IP} kare-ga [_{DP} *t*_i nani]-o katta ka siritai.
 I-Nom he-Nom what-Acc bought Q want-to-know
 ‘I want to know what he bought, too.’
- c. * Boku-mo [_{CP} *OP*_i [_{IP} e] ka] siritai.
 I-Nom Q want-to-know
 ‘I want to know what, too.’
- d. Boku-mo [_{CP} nani-o [_{IP} e] ka] siritai.
 I-Nom what-Acc Q want-to-know
 ‘I want to know what, too.’

(Takahashi 1994:283)

(8a) and (8b) indicate that when ellipsis is not involved, the null operator strategy is adopted. However, the strategy is blocked in constructing Sluicing, as in (8c). On the other hand, the sentence (8d) where the entire *wh*-phrase moves is well-formed. It leads Takahashi (1994) to conclude that syntactic *wh*-movement exists in Japanese. Throughout his work, he tries every possible way to argue for the existence of syntactic *wh*-movement that moves the entire *wh*-phrase. Only with this premise can the PF deletion account stand.

Even the discussion of Sluicing in a *wh*-in-situ language can be successfully accounted for with PF deletion theory, the problem that would be encountered with the approach in a language where overt *wh*-movement exists should be comparatively fewer. Instead of arguing for the existence of overt *wh*-movement in a *wh*-in-situ language as Takahashi (1994) painstakingly does, the discussion of English Sluicing by means of PF deletion spends more spaces on the properties of the deletion operation at PF, as in Lasnik (1999a, 1999b), Merchant (1999, 2001), Fox and Lasnik (2001) among others. Lasnik (1999a, 1999b), by investigating the constructions of pseudogapping and Sluicing, argues that the deletion operation can save some otherwise crashed derivation in terms of Minimalism. Specifically, deletion salvages violation of Full Interpretation (FI) caused by unchecked strong features by means of deleting them. Later, in Merchant (1999, 2001) and Fox and Lasnik (2001), they argue that the repair of island violation is a special property of deletion. Relevant discussion will be presented later.

4. Sluicing in Mandarin Chinese

4.1. The Characteristics of Sluicing and *Wh*-Construction in Chinese

First, consider sentences (9) and (10):

- (9) a. * Zhangsan zuotian yujian mouren, keshi wo bu zhidao shei
Zhangsan yesterday met someone but I not know who.
'Zhangsan met someone yesterday, but I don't know who.'
b. ..., keshi wo bu zhidao Zhangsan zuotian yujian shei
... but I not know Zhangsan yesterday met who.
'... but I don't who Zhangsan met yesterday.'
- (10) a. * Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao shenme
Zhangsan yesterday picked a thing but I not know what
'Zhangsan picked up something yesterday, but I don't know what.'
b. ..., keshi wo bu zhidao Zhangsan zuotian jiandao shenme
... but I not know Zhangsan yesterday picket what.
'... but I don't what Zhangsan picked up yesterday.'

From (9a) and (10a), it seems as if there is no Sluicing in Chinese. As we can see, both sentences are judged ungrammatical while (9b) and (10b), with the missing part refilled, are both well-formed. However, by replacing the *wh*-phrases *shei* 'who' and *shenme* 'what' with other *wh*-phrases, grammatical Sluicing sentences are derived, as *zainali* 'where' in (11), *shenmeshihou* 'when' in (12), and *weishenme* 'why' in (13):

- (11) a. Zhangsan zuotianmaile dong fangzi, keshi wo bu zhidao zainali
Zhangsan yesterday bought a house but I not know where
'Zhangsan bought a house yesterday, but I don't know where.'
b. ... keshi wo bu zhidao Zhangsan zuotian zainali maile dong fangzi
... but I not know Zhangsan yesterday where bought a house
'... but I don't know where Zhangsan bought a house.'
- (12) a. Zhangsan quguo meiguo, keshi wo bu zhidao shenmeshihou
Zhangsan has-been-to America but I now know when
'Zhangsan has been to America, but I don't know when.'
b. ... keshi wo bu zhidao Zhangsan shenmeshihou quguo meiguo
... but I not know Zhangsan when has-been-to America
'... but I don't know when has Zhangsan been to America.'
- (13) a. Zhangsan jue dingyiao xiuxue, keshi wo bu zhidao weishenme
Zhangsan decided-to suspend-study but I not know why
'Zhangsan decided to suspend the study, but I don't know why.'
b. ... keshi wo bu zhidao Zhangsan weishenme jue dingyiao xiuxue
... but I not know Zhangsan why decided-to suspend-study
'... but I don't know why Zhangsan decided to suspend the study.'

Comparing the grammaticality contrast in (9~10) and (11~13), I observe that the difference lies in the different types of *wh*-phrases. Namely, those found ungrammatical are built up with argument *wh*-phrases (*wh*-arguments) whereas the others with adjunct *wh*-phrases (*wh*-adjuncts). The ungrammatical sentences that come with *wh*-arguments might support the claim that there is no Sluicing in Chinese. However, their ill-formedness can be recovered by *shi* support, as shown in (14) and (15):

- (14) Zhangsan zuotian yujian mouren, keshi wo bu zhidao **shi** shei
Zhangsan yesterday met someone but I not know be who
'Zhangsan met someone yesterday, but I don't know who.'
- (15) Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao **shi** shenme
Zhangsan yesterday picked a thing but I not know be what
'Zhangsan picked up something yesterday, but I don't know what.'

Shi support is obligatory only for *wh*-arguments, so it is possible that Chinese merely have Sluicing sentences built with *wh*-adjuncts and those with *wh*-arguments should not be counted in. However, this possibility should be conceptually less preferable because the argument-adjunct asymmetry has been wide-discussed. In other words, it seems not strange at all to allow some diversity in them. Besides, I also find that *shi* support can also be applied to Sluicing sentences with *wh*-adjuncts as well as those contain *wh*-phrases originally in subject positions, as in (16~18) and (19~20), respectively:

- (16) Zhangsan zuotian maile dong fangzi, keshi wo bu zhidao **shi** zainali
Zhangsan yesterday bought a house but I not know be where
'Zhangsan bought a house yesterday, but I don't know where.'
- (17) Zhangsan quguo meiguo, keshi wo bu zhidao **shi** shenmeshihou
Zhangsan has-been-to America but I not know be when
'Zhangsan has been to America, but I don't know when.'
- (18) Zhangsan jue ding yao xiuxue, keshi wo bu zhidao **shi** weishenme
Zhangsan decided-to suspend-study but I not know be why
'Zhangsan decided to suspend the study, but I don't know why.'
- (19) you ren zhongle letou, keshi wo bu zhidao **shi** shei
have person win lottery but I not know be who
'Someone wins the lottery, but I don't know who.'
- (20) you dongxi diaoxialai, keshi wo bu zhidao **shi** shenme
have thing fall-down but I not know be who
'Something falls down, but I don't know what.'

Since all cases can have *shi* support, it is then natural to assume the existence of Sluicing in Chinese. But the necessity (as in *wh*-arguments) and optionality (as in

wh-adjuncts) for *shi* support need further investigation. As I will discuss later, *shi* support plays a fundamental role in many respects, both empirical and theoretical.

Before proceeding, it is necessary to mention the nature of *wh*-construction in Chinese. Unlike English, overt movement is not necessary to construct the *wh*-question in Chinese. Instead, Chinese tends to facilitate covert LF *wh*-movement (cf. Huang 1982) as well as unselective binding between base-generated Q-operators and in-situ *wh*-phrases (cf. Tsai 1999). Both approaches bring some challenges to PF deletion theory. Precisely, an in-situ *wh*-phrase will undoubtedly be deleted when PF deletion applies, and operations that apply at LF will have no effect at PF, that is, LF-movement will not rescue the *wh*-phrase from being deleted, since operations at PF are only effective in dealing with structures in overt syntax. From this point of view, one may argue that Chinese, as a *wh*-in-situ language, had better be analyzed under LF copying theory. However, I will demonstrate in later sections that even LF approach is not applicable and analyze Sluicing in Chinese with PF one.

4.2. ANALYSES

4.2.1. VP-fronting Analysis

Under the PF account, overt movement must take place in order to create an ellipsis licensing configuration, a configuration where ellipsis (i.e. IP deletion in Sluicing) can come to apply and that immunizes the *wh*-phrase against ellipsis. Since Chinese lacks overt *wh*-movement, I then try to find some alternatives of overt movement that may play the role to move the *wh*-phrase. If *shi* support is taken into consideration, a possibility is that the displaced constituent is *shi* plus a *wh*-phrase. *Shi* is a copula verb that frequently occurs in sentences, so the constituent that moves might be a Verb Phrase (VP). In fact, the overt movement of VP (henceforth VP-fronting) in Chinese is productive and has been discussed in Huang (1995), as shown in (21):

- (21) piping taziji_{*i/j}, Zhangsan_i zhidao Lisi_j juedui bu hui
 criticize himself Zhangsan knows Lisi definitely not will
 ‘Criticize himself_{*i/j}, Zhangsan_i knows Lisi_j definitely will not.

(Huang 1995:119)

The coindex between the reflexive *taziji* ‘himself’ and *Lisi* indicates that the VP ‘Criticize himself’ is extracted out of the embedded sentence. Some VPs that do not contain reflexives can also be fronted without any problem.

- (22) suo bieren de huai hua, Zhangsan juedui bu hui
 speak others DE bad word, Zhangsan definitely not will
 ‘Speak ill of others, Zhangsan definitely will not.

Thus, a possible analysis with VP-fronting as an alternative to genuine *wh*-movement can be illustrated as follows:

- (23) Zhangsan zuotian yujian mouren, keshi wo bu zhidao [**shi** shei]_i
Zhangsan yesterday met someone but I not know be who
~~Zhangsan zuotian yujian t_i~~
Zhangsan yesterday met
'Zhangsan met someone yesterday, but I don't know who.'
- (24) Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao [**shi** shenme]
Zhangsan yesterday picked a thing, but I not know be what
~~Zhangsan zuotian jiandao t_i~~
Zhangsan yesterday picked
'Zhangsan picked up something yesterday, but I don't know what.'

This approach seems to work. However, as argued in Huang (1995), VP-fronting like other kinds of movement should be able to reconstruct the fronted VP to its original position in D-Structure but unfortunately it is not the case. If we reconstruct VP in (23) and (24) back, the sentences will be ill-formed.

- (25) * Zhangsan zuotian yujian mouren, keshi wo bu zhidao
Zhangsan yesterday met someone but I not know
Zhangsan zuotian yujian shi shei
Zhangsan yesterday met be who
Lit. 'Zhangsan met someone yesterday, but I don't know who did Zhangsan meet yesterday.'
- (26) * Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao
Zhangsan yesterday picked a thing, but I not know
Zhangsan zuotian jiandao shi shenme
Zhangsan yesterday picked be what
Lit. 'Zhangsan picked up something yesterday, but I don't know what did Zhangsan picked up yesterday.'

The ungrammaticality is not expected. As far as the data are concerned, the only way to make the VP-fronting analysis valid is to reconsider a well-formed D-Structure in which VP-fronting and IP ellipsis can be applied in turn. In fact, as we can see from the following sentences, the ungrammaticality can be eliminated by inserting *de* 'DE', a frequently occurred marker in Chinese.²

² *De* often occurs as a possessive marker, which is parallel to English genitive 's. Here, it occurs in a relative clause and plays the role to bridge the noun head and the relative clause.

- (27) Zhangsan zuotian yujian mouren, keshi wo bu zhidao
Zhangsan yesterday met someone, but I not know
Zhangsan zuotian yujian **de** shi shei
Zhangsan yesterday met DE be who
Lit. 'Zhangsan met someone yesterday, but I don't know who did Zhangsan meet yesterday.'
- (28) Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao
Zhangsan yesterday picked a thing, but I not know
Zhangsan zuotian jiandao **de** shi shenme
Zhangsan yesterday picked DE be what
Lit. 'Zhangsan picked up something yesterday, but I don't know what did Zhangsan picked up yesterday.'

Note that in this case the second conjuncts in these sentences become pseudo-clefts. However, even if the original representation is pseudo-cleft, so that VP-fronting analysis can work, such an analysis still encounters serious problems. First, it is impossible to create corresponding pseudo-clefts with *wh*-adjuncts.

- (29) * Zhangsan zuotian maile dong fangzi, keshi wo bu zhidao
Zhangsan yesterday bought a house, but I not know
Zhangsan zuotian maile dong fangzi **de** shi zainali
Zhangsan yesterday bought a house DE be where
Lit. 'Zhangsan bought a house yesterday, but I don't know where did Zhangsan buy a house.'
- (30) * Zhangsan quguo meiguo, keshi wo bu zhidao
Zhangsan has-been-to America, but I not know
Zhangsan quguo meiguo **de** shi shenmeshihou
Zhangsan has-been-to America DE be when
Lit. 'Zhangsan has been to America, but I don't know when has Zhangsan been to America.'

The ill-formedness implies that pseudo-cleft counterparts with *wh*-adjuncts are not derivable. But one might still suspect that the original structure before VP-fronting and IP ellipsis might be like the following grammatical ones in which *shi* followed by a *wh*-adjunct shows up in a position different from those in (29) and (30).

- (31) Zhangsan zuotian maile dong fangzi, keshi wo bu zhidao
Zhangsan yesterday bought a house, but I not know
Zhangsan zuotian shi zainali maile dong fangzi **de**
Zhangsan yesterday be where bought a house DE

Lit. 'Zhangsan bought a house yesterday, but I don't know where did Zhangsan buy a house.'

- (32) Zhangsan quguo meiguo, keshi wo bu zhidao
Zhangsan has-been-to America, but I not know
Zhangsan shi shenmeshihou quguo meiguo **de**
Zhangsan be when has-been-to America DE

Lit. 'Zhangsan has been to America, but I don't know when has Zhangsan been to America.'

Although (31) and (32) are grammatical, there is no reason to argue that *shi* followed by a *wh*-adjunct is able to undergo VP-fronting, since, undoubtedly, it is not a VP. In fact, (31) and (32) are so-called cleft sentences. To facilitate the discussion on VP-fronting analysis, I will skip it here and return to investigate this possibility in the next section.

The second problem I find in VP-fronting analysis concerns the parallelism condition on ellipsis (henceforth Parallelism). Parallelism is a constraint that applies to ensure syntactic recoverability and semantic interpretability of an elided constituent by means of demanding the elided must be identical to its antecedent. The term 'identical' has been defined in various ways. Fiengo and May (1994), Fox (2000) among others propose that an elided constituent must be syntactically identical to an overt antecedent at LF and more strictly, even the lexical items must be the same (Fiengo and May 1994). Alternatively, others argue that the identification depends on semantic or pragmatic equivalence. Still more, there are some mixed theories, such as Rooth (1992), which claims that Parallelism must be syntactic for some structures, but for others Parallelism is semantic or pragmatic. Despite the diversity of Parallelism, VP-fronting on the basis of pseudo-clefts will inevitably encounter problems. The following shows the transition from a common sentence to a pseudo-cleft.

- (33) a. Zhangsan zuotian yujian shei
Zhangsan yesterday met who
'Who did Zhangsan meet yesterday?'
b. Zhangsan zuotian yujian **de shi** shei
Zhangsan yesterday met DE be who
'Who is the one that Zhangsan met yesterday?'

Syntactically speaking, (33a) is impossible to be the same with (33b) at LF and the semantics of both sentences cannot even be the same. Although they are seemingly alike, the second one involves emphatic force, that is, the focus of the whole sentence falls on the Noun Phrase (NP) that follows *shi*. Particularly in Sluicing, when VP fronts to a position beyond IP, the part that is going to be elided still contains a marker *de* that the antecedent does not have, as in (34):

- (34) Zhangsan zuotian yujian mouren, keshi wo bu zhidao shi shei_i
 Zhangsan yesterday met someone, but I not know be who
 [NP Zhangsan zuotian yujian **de**] [VP t_i]]
 Zhangsan yesterday met DE

What is more serious is that the elided constituent and its antecedent do not belong to the same syntactic category. Precisely, the elided is a headless relative clause and is generally considered as an NP or DP (for being in the subject position), whereas the antecedent is an IP. All in all, VP-fronting analysis is rejected empirically, and the arguments include the inability to reconstruct as well as violation of Parallelism.

4.2.2. Cleft Analysis

It is claimed in analyses such as Kawabara (1996) and Kizu (2000) that Sluicing is derived from the cleft construction. Kizu (2000) presents some examples including Japanese, Korean and Chinese to show the parallel property of Sluicing and clefts, and argues that Sluicing in *wh*-in-situ languages should be analyzed as deriving from clefts. Noteworthy is that he provides a pair of sentences in Chinese³ to show that *shi* is necessary both in Sluicing and clefts, as in (35).

- (35) a. Shi shuzhi wo kanjian diao dao wuding le
 be tree-branch I see fall onto roof ASP
 ‘It was a tree branch that I saw fall on the roof.’
 b. Meige ren dou shuo Zhangsan ai-shang le shenme ren le
 each person all say Zhangsan love-up PTF what man PEF
 keshi meiren zhidao [*(**shi**) shei].
 but no one knows be who
 ‘Everyone said that Zhangsan fell in love with someone, but no one knew who.’
 (Kizu 2000:147)

However, careful investigation shows that his analysis is unable to account for Chinese Sluicing. First consider cleft sentences from (36) to (37).

- (36) **Shi** Zhangsan xihuan Xiaomei (de)
 be Zhangsan like Xiaomei DE
 ‘It is Zhangsan who likes Xiaomei.’
 (37) Zhangsan **shi** xihuan Xiaomei (de)
 Zhangsan be like Xiaomei DE
 ‘Zhangsan DOES like Xiaomei.’

³ Kizu’s data in Chinese concerns *wh*-argument only, where *shi* support is necessary. He does not pay any attention to *wh*-adjunct examples.

- (38) * Zhangsan xihuan **shi** Xiaomei (de)
Zhangsan like be Xiaomei DE

In these cleft sentences, *shi* can occur (and thus cleaves the sentence into two parts) before a subject or a VP, but it cannot occur before an object. This implies that the *wh*-phrase in Sluicing cannot be originally in an object position under the cleft analysis. However, numerous Sluicing sentences in Chinese are in fact constructed with object *wh*-phrases. This is the first problem. Second, Sluicing sentences that involve *wh*-adjuncts cannot be accounted for under the cleft analysis. Consider (39):

- (39) Zhangsan zuotian maile dong fangzi, keshi wo bu zhidao
Zhangsan yesterday bought a house, but I not know
Zhangsan zuotian shi zainali maile dong fangzi (**de**)
Zhangsan yesterday be where bought a house DE
Lit. ‘Zhangsan bought a house yesterday, but I don’t know where did Zhangsan buy a house.’

Despite the mechanism that saves *shi zainali* ‘be where’ from deletion, the cleft analysis still fails. In (39), what is optional is *de* ‘DE’ rather than *shi* ‘be’. This phenomenon fails to explain why *shi* in the *wh*-adjunct Sluicing is optional. Precisely, cleft analysis predicts that *shi* support is necessary in both *wh*-argument and *wh*-adjunct Sluicing, but the unnecessary element *de* is optional. When *de* appears, whatever operation may leave it behind, which is contrary to the fact. In short, it seems odd for Sluicing to have an original sentence in which *shi* is always necessary whereas the undesired *de* is optional.

With the reasons above, I exclude the possibility that Sluicing is derived from cleft sentences. However, cleft sentences are known to be a kind of focus construction and what to deal with Sluicing in Chinese may also have something to do with focus. In fact, works such as Tancredi (1992) and Merchant (1999) among others all have some relevant discussion on the issue of ellipsis in a focus-based theory.

4.2.3 Focus Movement Analysis

There is one more possible candidate, focus movement, to take the role to move the *wh*-phrase in Sluicing so that the *wh*-phrase can be immune from ellipsis.

- (40) a. wo chi zhurou, danshi bu chi niurou
I eat pork but not eat beef
‘I eat port, but not beef.’
b. wo zhurou_i chi t_i, danshi niurou_j bu chi t_j
I port eat but beef not eat
‘I eat PORK, but not BEEF.’

Serving as the foci of the whole sentence, both NPs *nirou* ‘beef’ and *zhurou* ‘pork’ in (40b) undergo focus movement to higher adjoined positions. The displaced constituents are also termed as contrastive topics, for they convey certain contrastive force. The force is realized in (40) by the contrast of affirmation in *niurou* and negation in *zhurou*. In short, a constituent that undergoes focus movement is the focus of a sentence, and a sentence in which focus movement takes place always shows the contrastive effect. Moreover, not only a nominal expression but also a *wh*-phrase has the ability to take up focus movement.

- (41) a. Zhangsan zui xiang yudao shei?
Zhangsan most want meet who
‘Who does Zhangsan want to meet most?’
b. shei_i, Zhangsan zui xiang yudao t_i?
who Zhangsan most want meet
‘Who does Zhangsan want to meet most?’

Since the *wh*-phrase in Chinese can undergo overt focus movement, I can then reanalyze Sluicing in Chinese in this way. The structures that involve focus movement are shown in the following. Note that IP ellipsis has not yet been applied.

- (42) Zhangsan zuotian yujian mouren, keshi wo bu zhidao **shei**_i
Zhangsan yesterday met someone but I not know who
[Zhangsan zuotian yujian t_i]
Zhangsan yesterday met
‘Zhangsan met someone yesterday, but I don’t know who did he meet yesterday.’
- (43) Zhangsan zuotian jiandao yige dongxi, keshi wo bu zhidao **shenme**_i
Zhangsan yesterday picked a thing but I not know what
[Zhangsan zuotian jiandao t_i]
Zhangsan yesterday picked
‘Zhangsan picked up something yesterday, but I don’t know what did he pick up yesterday.’
- (44) Zhangsan maile dong fangzi, keshi wo bu zhidao **zainali**_i
Zhangsan bought a house but I now know where
[Zhangsan t_i maile dong fangzi]
Zhangsan bought a house
‘Zhangsan bought a house, but I don’t know where did Zhangsan buy a house.’
- (45) Zhangsan quguo meiguo, keshi wo bu zhidao **shenmeshihou**_i
Zhangsan has-been-to America but I not know when
[Zhangsan t_i quguo meiguo]
Zhangsan has-been-to America

- (46) Zhangsan juedingyao xiuxue, keshi wo bu zhidao **weishenme**
Zhangsan decided-to suspend-study but I not know why
[Zhangsan *t*_ijuedingyao xiuxue]
Zhangsan decided-to suspend-study

Those going to be deleted are in brackets. Note that there are traces represented as *t* in the brackets. They indicate the positions to which the displaced *wh*-phrases should be reconstructed. Remember I have found the difficulty on reconstruction of the *wh*-adjuncts in previous discussions, whereas in these sentences, both two types of *wh*-phrases can be reconstructed back to their original positions without any problem, as shown in (47) for the *wh*-argument type and (48) for the *wh*-adjunct type.

- (47) Zhangsan zuotian yujian mouren, keshi wo bu zhidao
Zhangsan yesterday met someone but I not know
[Zhangsan zuotian yujian **shei**]
Zhangsan yesterday met who
‘Zhangsan met someone yesterday, but I don’t know who did he meet yesterday.’
- (48) Zhangsan maile dong fangzi, keshi wo bu zhidao
Zhangsan bought a house but I now know
[Zhangsan **zainali** maile dong fangzi]
Zhangsan where bought a house
‘Zhangsan bought a house, but I don’t know where did Zhangsan buy a house.’

Note that the corresponding Sluicing sentence of (47) needs the support of *shi*, otherwise it would be ill-formed. But I cannot find the occurrence of *shi* in the illustration above. What worse is that the occurrence of *shi* before the *wh*-phrase *shei* will degrade the sentence.

- (49) Zhangsan zuotian yujian mouren, keshi wo bu zhidao
Zhangsan yesterday met someone but I not know
[Zhangsan zuotian yujian (***shi**) shei]
Zhangsan yesterday met be who
‘Zhangsan met someone yesterday, but I don’t know who did he meet yesterday.’

However, I will provide evidence to show that the structure that is ready for focus movement and IP ellipsis to take place (to construct Sluicing) is a sentence like (47) rather than (49). Relevant discussion will be presented with a lot of details later. In the current discussion, focus movement analysis, unlike VP-fronting one, obeys the nature of reconstruction. Next to consider is Parallelism.

- (50) Zhangsan zuotian yujian mouren, keshi wo bu zhidao shi **shei**;
Zhangsan yesterday met someone but I not know be who
~~{Zhangsan zuotian yujian *t*}~~
Zhangsan yesterday met
‘Zhangsan met someone yesterday, but I don’t know who did he meet yesterday.’

The sentence (50)⁴ here seems problematic under Parallelism in that the elided is [_{IP} *Zhangsan zuotian yujian t_i*] while its antecedent is [_{IP} *Zhangsan zuotian yujian mouren*]. These two IPs are superficially different in that the elided contains a trace *t* while the antecedent contains an indefinite *mouren* ‘someone’. This seems to be an apparent violation of Parallelism. However, such a violation can be nullified under the current theoretical framework, which is in essence a traditional observation first noted since Kuroda (1965) and reported by Nishigauchi (2001). Kuroda (1965) argues that a *wh*-phrase should be treated as *wh* + some N at LF. This insight is actually compatible to that of Chomsky (1993, 1995), which develops a theory concerning LF-construction termed as copy theory of movement. In that theory, movement is identified as copying plus deletion. Kuroda’s insight and copy theory of movement together rescue the violation in (50), since the trace *t* can be reinterpreted as an indefinite (in this case, someone) at LF. Parallelism is thus respected because both IPs are syntactically and semantically identical. As for *wh*-adjuncts, consider (51).

- (51) Zhangsan maile dong fangzi, keshi wo bu zhidao **zainali**;
Zhangsan bought a house but I now know where
~~{Zhangsan *t* maile dong fangzi}~~
Zhangsan bought a house
‘Zhangsan bought a house, but I don’t know where did Zhangsan buy a house.’

Note that the elided IP in (51) contains a trace but the antecedent does not have any. Syntactically speaking, they will not be the same at the level of LF, since the trace *t* would be represented as *somewhere* with the copy theory of movement. But such an apparent paradox should be reconsidered if we rebuild a sentence quite similar to (51):

- (52) Zhangsan zaimougedifang maile dong fangzi, keshi wo bu zhidao **zainali**;
Zhangsan somewhere bought a house but I now know where
~~{Zhangsan *t* maile dong fangzi}~~
Zhangsan bought a house
‘Zhangsan bought a house somewhere, but I don’t know where did Zhangsan buy a house.’

In (52), I add an adverb *zaimougedifang* ‘somewhere’ to the antecedent sentence. This

⁴ To facilitate discussion, I skip the issue of *shi* support in (50) and return to discuss it later.

makes the elided and the antecedent be structurally parallel. Comparing (51) and (52), I have an idea that in (51) there is an (implicit) event argument right located in the position parallel to that of *zaimougedifang* in (52). This assumption is not a speculation since on one hand there is a discourse-available congener of locative adverb *zainali*; and on the other hand, an event must occur in some location and certain time. This semantics-based solution captures the intuition that the elided and its antecedent in (51) are in many ways identical. Alternatively, the problem can be traced back to the disputation on the definition of Parallelism, as I have briefly discussed in the section of VP-fronting analysis. That is, what counts as identical or parallel in Parallelism is syntactic and (or) semantic. By any means, I do not think that the elided and the antecedent in (51) violate Parallelism; otherwise all other Sluicing sentences that involve *wh*-adjuncts but without an explicit antecedent for the *wh*-adjuncts would be problematic. If this problem occurred in Chinese, it would inevitably appear in English too, as in (53), (54) and all other relevant sentences.

(53) John bought a house, but I don't know where_i [John bought a house t_i].

(54) John bought a house, but I don't know when_i [John bought a house t_i].

Thus, the violation of Parallelism in (51) should be nullified, and as far as the violation that I found in VP-fronting analysis is concerned, focus movement analysis should be unproblematic. More evidence and especially motivation for such an analysis will be presented from the next section.

4.3. Focus Nature in Sluicing

Probably, the most important characteristic of focus movement is that it always occurs in a sentence that contains contrastive force, as discussed in (40) and (41) in which focus movement is natural and permitted. On the contrary, focus movement becomes less natural if the negator *bu* 'not' is eliminated:

(55) a. wo chi niurou, erqie chi zhurou

I eat beef and eat pork

'I eat beef, and pork.'

b. ?? wo niurou_i chi t_i, erqie zhurou_j chi t_j

I beef eat and pork eat

'I eat BEEF, but not PORK.'

In (55b), the contrastive force is not realized so the focus movement is not preferable. Furthermore, there is yet another construction in which focus movement often occurs. This kind of construction always involves emphatic power. Namely, the constituent that undergoes focus movement must be either something worthy of emphasizing or

something special. The adverb *zui* ‘most’ in Chinese is always an eligible candidate that licenses an emphatic reading to a sentence.

- (56) a. wo zui xiang qu riben
I most want go Japan
‘I want to go to Japan most.’
b. riben_i, wo zui xiang qu t_i
Japan I most want go
‘I want to go to JAPAN most.’

The occurrence of *zui* ‘most’ makes *riben* ‘Japan’ eligible to undergo focus movement. Similarly, a sentence without *zui* is less natural to have a constituent focus-moved.

- (57) a. wo xiang qu riben
I want go Japan
‘I want to go to Japan.’
b. ? riben_i, wo xiang qu t_i
Japan I want go
‘I want to go to JAPAN.’

Without the occurrence of *zui*, (57b) is less natural than (56b). This tendency is even more obvious in a sentence where the constituent that focus-moves is a *wh*-phrase. That is, a sentence in which there is no much emphatic power but focus movement takes place sounds somehow odd.

- (58) a. shei_i, Zhangsan zui xiang yudao t_i?
who Zhangsan most want meet
‘Who does Zhangsan want to meet most?’
b. ? shei_i, Zhangsan xiang yudao t_i?
who Zhangsan want meet
‘Who does Zhangsan want to meet?’

In fact, the contrastive force is also realized in Chinese Sluicing since we can find the occurrence of *shi*, a frequently-seen emphatic marker in Chinese.

- (59) Zhangsan zuotian yujian mouren, keshi wo bu zhidao **shi** shei
Zhangsan yesterday met someone but I not know be who
‘Zhangsan met someone yesterday, but I don’t know who.’
(60) Zhangsan maile dong fangzi, keshi wo bu zhidao (**shi**) zainali
Zhangsan bought a house but I now know be where

‘Zhangsan bought a house, but I don’t know where.’

Although *shi* is not necessary in (60), its occurrence does not degrade the grammaticality at all. Conceptually, the remnant in an elliptical construction is generally considered as an emphatic constituent even if *shi* does not appear. The reason is quite straightforward because the only constituent hearable in a sentence needs not to be redundantly marked as emphatic. For the purpose here, it is undoubted that *shi* can serve as an emphatic marker, as shown in (61) to (63)

- (61) *shi* Zhangsan zuotian kanjian Lishi
be Zhangsan yesterday saw Lisi
‘It is Zhangsan who saw Lisi yesterday.’
- (62) Zhangsan *shi* zuotian kanjian Lishi
Zhangsan be yesterday saw Lisi
‘It is yesterday when Zhangsan saw Lisi.’
- (63) Zhangsan zuotian *shi* kanjian Lishi
Zhangsan yesterday be saw Lisi
‘Zhangsan DID see Lisi yesterday.’

Therefore, *shi* in the Sluicing sentence can be seen as an emphatic marker that emphasizes the remnant *wh*-phrase. Besides, I also find a tendency that prefers contrastive coordination in Sluicing, as shown in (64) and (65).

- (64) Zhangsan zuotian yujian mouren, keshi wo bu zhidao shi shei
Zhangsan yesterday met someone but I not know be who
‘Zhangsan met someone yesterday, but I don’t know who.’
- (65) Zhangsan zuotian yujian mouren, wo zhidao shi shei
Zhangsan yesterday met someone I know be who
‘Zhangsan met someone yesterday, but I don’t know who.’

The second conjunction in (64) has a negative element whereas that of (65) does not. Although both two sentences are judged grammatical, (64) is by far more natural and more likely to be a typical Sluicing sentence. By comparing Sluicing constructions with other sentences which are generally considered as involving focus movement, we find a great deal of similarities between them.

The focal nature in Sluicing is even more magnificent in the semantic ground. Merchant (1999), by abandoning the LF-isomorphism condition of Parallelism, discusses focus condition on ellipsis in terms of semantics. He notes that sentences with implicit correlates are found problematic under Parallelism.

- (66) Abby was reading, but I don’t know what.

(67) Ben called – guess when!

Both elided IPs above contain a *wh*-trace, which inevitably violates Parallelism. As mentioned previously, Chinese counterparts also have such violation on Parallelism⁵. This leads Merchant (1999), following the insight of Schwarzschild (1998), to adopt the notion of e-GIVENness and the focus condition on ellipsis, as shown in the following:

(68) e-GIVENness

An expression E counts as e-GIVEN iff E has a salient antecedent A and, modulo \exists -type shifting.

- i. A entails F-clo(E), and
- ii. E entails F-clo(A).

With this as the basis, he then proposes the focus condition on IP ellipsis to deal with the IP ellipsis in Sluicing.

(69) Focus condition on IP ellipsis

An IP α can be deleted only if α is e-GIVEN.

This is essentially a focus-based theory (cf. Rooth 1992, Schwarzschild 1998) and it works in terms of F-closure, where F-closure is defined by Schwarzschild (1998) as follows:

(70) F-closure

The F-closure of α , written F-clo(α), is the result of replacing F(ocus)-marked parts of α with \exists -bound variables of the appropriate type.

In this analysis, the antecedent and the elided IP in (71) can be transformed into the representations shown in (72) and (73) in terms of F-closure, and in them the F-marked constituents in the antecedent and in the elided IP are *someone* and *who* respectively.

(71) John met someone, but I don't know who; [~~John met t_i~~].

(72) a. F-clo(IP_E) = $\exists x$.John met x. (John met t_i.)

b. IP_A' = $\exists x$.John met x. (John met someone.)

(73) a. F-clo(IP_A) = $\exists x$.John met x. (John met t_i.)

⁵ Parallelism or isomorphism, being the main violation in the VP-fronting analysis, is nullified under the focus-based analysis in Merchant (1999). This seems to mean that the violation of Parallelism in the VP-fronting analysis is of no importance. However, the violation of Parallelism in the VP-fronting analysis is notably much stronger than that in the focus movement one. In fact, Parallelism does play a crucial role in works such as Fox and Lasnik (2001). By reviewing Merchant (1999), my purpose here is to show that there is focus force involved and that the remnant constituent is focus marked. My focus movement analysis can thus be justified in the semantic ground.

b. $IP_E' = \exists x. \text{John met } x.$ (John met someone.)

The first part of e-GIVENness condition, (68i), is satisfied by (72) because it is clear that IP_A' entails $F\text{-clo}(IP_E)$ since they are identical. Moreover, the second part of e-GIVENness (68ii) is also fulfilled since IP_E' also entails $F\text{-clo}(IP_A)$, as in (73). The elided IP is then e-GIVEN so it can be deleted. One important point worth extracting from this theory is that the remnant *wh*-phrase is always F-marked. In the same fashion, the *wh*-phrase in Chinese Sluicing should also receive such force and be focus marked. The conclusion undoubtedly supports my focus movement analysis. However, since it is possible for a *wh*-phrase in English to be focus-marked by means of *wh*-movement, it should still be possible that overt movement taken place in Chinese Sluicing is actually genuine *wh*-movement, as Takahashi (1994) argues for in Japanese. The reason for the possibility is that focus force in Chinese should also be realized by *wh*-movement. Nevertheless, I will argue that overt movement in Sluicing is potentially different from English and should be categorized as focus movement.

4.4. *Shi* Support and Focus Projection

Wh-movement in English has been widely discussed and the landing site for the movement has also been empirically proved as [Spec, CP]. This operation rescues the displaced *wh*-phrase from ellipsis since the landing site is beyond IP-node. For Chinese, I propose that the overt movement involved in Sluicing is focus movement, and moves a *wh*-phrase beyond IP-node to construct Sluicing. As I discussed, the support of *shi* is necessary when the sluice contains a *wh*-argument, such as *shei* ‘who’ and *shenme* ‘what’; while the support is optional in the case that contains a *wh*-adjunct. *Wh*-adjuncts include *zainali* ‘where’, *shenmeshihou* ‘when’, and *weishenme* ‘why’. In both cases, *shi* can appear to the left of the remnant *wh*-phrase. This observation makes a prediction that the remnant must not be in the embedded [Spec, CP]. The embedded CP, by traditional observation and definition, should be syntactically and semantically selected by the matrix verb, so the embedded CP must be right adjacent to and be complement of the matrix verb.

(74) a. John wonders who Bill meets.

b. * John wonders that Bill meets Sue.

(75) a. * John believes who Bill meets.

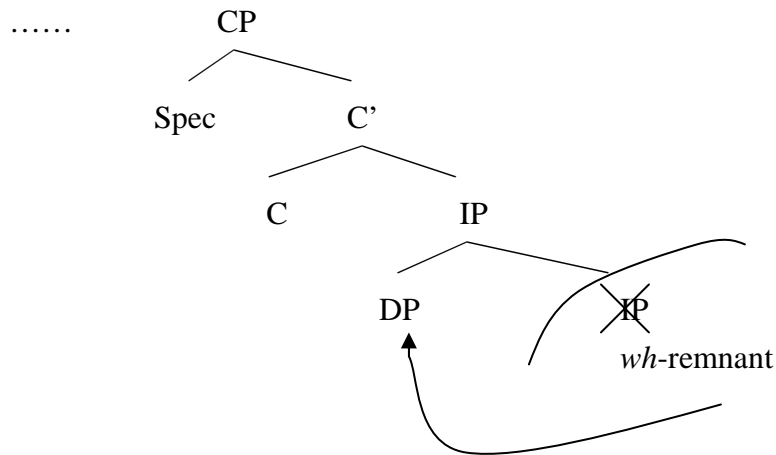
b. John believes that Bill meets Sue.

The verb *wonder* in (74) should select a [+*wh*] CP and that is why (74a) contrasts with (74b). The verb *believe* in (75), on the other hand, should select a [-*wh*] CP and (75a) is thus ungrammatical. This illustration shows that the matrix verb should be adjacent to its complement CP. In this way, if a remnant *wh*-phrase in a Chinese Sluicing sentence

is located in [Spec, CP], it is impossible to have a position for *shi* to fill in. Therefore, the remnant *wh*-phrase, argument or adjunct, should not be in [Spec, CP].

Baltin (1982) as well as Lasnik and Saito (1992) argue that the IP-adjoined position can count as a landing site for a focal or topicalized phrase. This offers a possible position for the focus-moved *wh*-phrase in Chinese Sluicing to land.

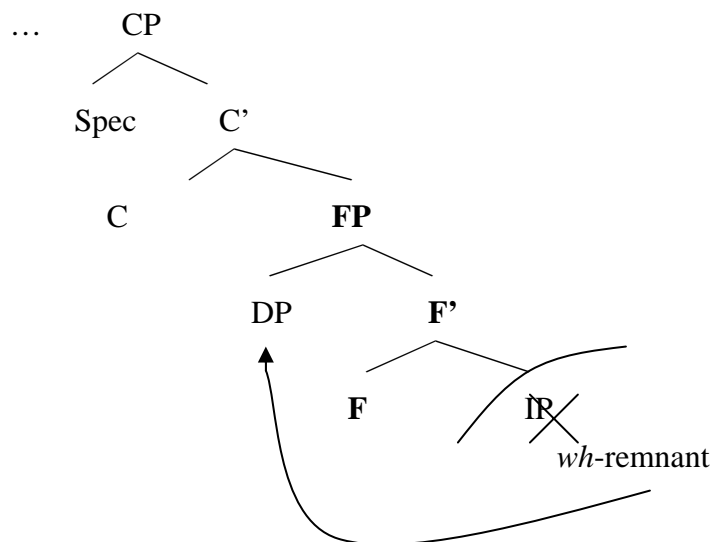
(76)



Although this configuration provides a position for *shi* support to fill in, it raises even more problems. First, the licensing condition is not satisfied since the ellipsis of lower IP is not licensed by an eligible head in the sense of Saito and Murasugi (1990) and Lobeck (1990, 1995). The closest functional head in this configuration is C but it fails to govern (or form a Head-complement relation with) the lower IP for the reason that the upper IP acts as a barrier to prevent C from governing the lower IP. Second, as noted by Takahashi (1994), the lower IP does not count as maximal projection under the segment theory of adjunction structures discussed by May (1985) and Chomsky (1986), so that the lower IP cannot undergo deletion (or movement) in the sense of Affect- α . Third, in the Minimalist framework, the mechanism that triggers the adjunction to an IP is not quite clear. Precisely, in terms of feature checking, it is hard to tell what kind of feature is checked and which head is checked with.

However, these problems will be solved with a new configuration. Following Culicover (1991) and Tsai (1999), I think that a focused element should undergo raising to [Spec, FP], where the FP is beyond the IP-node.

(77)



This configuration solves those problems. First, the licensing condition is satisfied since F is undoubtedly a functional head and it also agrees with its Specifier. Simultaneously, the feature checking relation indirectly solves the third problem regarding the motivation and mechanism of movement in the Minimalist framework. The head F, bearing a strong [+F(ocus)] feature, triggers focus movement of the remnant *wh*-phrase in Sluicing to [Spec, FP], resulting in a Spec-head agreement relation. Finally, the second problem does not occur any more because FP does not belong to the same segment of IP. Thus it goes well with the segment theory of adjunction structures.

Nevertheless, still lots of mysteries need to be further considered. For focus movement analysis, issues are more or less related to *shi* support. Precisely, where and when is *shi* supported, and why is it necessary? For ellipsis in general, I will discuss a problem of PF deletion theory. Why does deletion at PF have to respect Parallelism constraint operative at LF because there should be no connection between PF and LF after the split. All these are the mysteries that I will explore in the following sections.

5. Theoretical considerations

5.1. Multiple *Wh*-construction

A typical multiple *wh*-construction is a sentence in which more than one *wh*-phrase appears. In a *wh*-moving language like English, some *wh*-phrase in a multiple *wh*-question can (or is more preferable to) move overtly while others cannot. This is often known as the superiority effect.

(78) Who_i did John tell t_i that he should buy what?

(79) ?* What_i did John tell who that he should buy t_i?

(Bošković 1999:163)

Unlike English, the *wh*-phrases in *wh*-in-situ languages like Chinese need not to

move overtly. However, I find that the *wh*-phrase in Chinese multiple *wh*-questions sometimes moves overtly and the movement is arguably not genuine *wh*-movement. Instead, I will argue that the movement here is the same as that seen in Sluicing, namely focus movement. Evidence includes the diversity of possible answers for Chinese counterpart of (78), and some particular arguments developed by Hornstein (1995), Hagstrom (1998), and Bošković (1998, 1999), concerning the availability of single-pair answers in multiple *wh*-questions.

5.1.1. The Unanswerable *Wh*-phrase

The *wh*-phrase, say *where*, is always unanswerable in corresponding answers whereas *who* always needs to be answered.

(80) Who_i t_i wonders [_{CP} where_j [_{IP} we bought what t_j]]?

(81) a. John wonders where we bought what.

b. John wonders where we bought the fruit.

c. * John wonders we bought what in the market.

d. * John wonders we bought the fruit in the market.

Presumably, when a multiple *wh*-question happens to be a complex sentence, a *wh*-phrase in it needs to be answered if the *wh*-phrase moves (either overt or covert) to matrix [_{Spec}, CP]. On the contrary, a *wh*-phrase must not be answered if it moves to embedded [_{Spec}, CP]. In this reasoning, *who* in (80) must have moved to matrix [_{Spec}, CP], since lowering to the embedded [_{Spec}, CP] is never an option. Similarly, *where* which occurs in the left periphery of the embedded sentence must be in the embedded [_{Spec}, CP] for it is unanswerable. The optional *what*, on the other hand, can LF-move either to the embedded or to the matrix [_{Spec}, CP]. The former option results in its unanswerability, as in (81a), whereas the latter one leads it to be answered, as in (81b). The fourth but impossible answer (81d) is blocked simply because it conflicts with the selection restriction.

Where is presumed to occupy the embedded [+*wh*] [_{Spec}, CP] by means of genuine *wh*-movement. By traditional observation, when a *wh*-phrase moves into a [+*wh*] position, it will not be able to move anymore. Metaphorically, it will be frozen there. This observation can also be fully accounted for from two perspectives of Minimalism. One is from Economy consideration: Epstein (1992), by investigating English multiple *wh*-construction, proposes that a *wh*-phrase can *wh*-move once and only once, either overtly and covertly. *Where* in (81) has undergone overt *wh*-movement once so its ability to *wh*-move at LF is accordingly absorbed. Thus, *where* ends up in the embedded and cannot be answered. The other one is feature checking. The [+*wh*] feature that triggers the *wh*-movement of *where* has been checked off and eliminated by Spell-Out. So it accounts for the inability of *where* to take up further LF *wh*-movement to the matrix position. All these imply that *where* has undergone genuine *wh*-movement and

landed in the embedded [Spec, CP]. Interestingly, the counterparts in Chinese do not pattern the same.

(82) Shei xiangzhidao Zhangsan shenmeshihou hui mai shenme?
Who wonder Zhangsan when will buy what

‘Who wonders when will Zhangsan buy what?’

(83) a. Wo xiangzhidao Zhangsan shenmeshihou hui mai shenme.
I wonder Zhangsan when will buy what

‘I wonder when will Zhangsan buy what.’

b. Wo xiangzhidao Zhangsan shenmeshihou hui mai che.

I wonder Zhangsan when will buy car

‘I wonder when will Zhangsan buy a car.’

c. Wo xiangzhidao Zhangsan mingtian hui mai shenme.

I wonder Zhangsan tomorrow will buy what

‘I wonder Zhangsan will buy what tomorrow.’

Unlike English, both *wh*-phrases in the embedded sentence can be answered respectively. It is because *shenmeshihou* ‘when’ need not to move overtly in Chinese. However, there is yet another more surprising pattern found in Chinese. One of the *wh*-phrases in the embedded has undergone overt movement, as in (84).

(84) Shei xiangzhidao shenmeshihou_i Zhangsan t_i hui mai shenme?
Who wonder when Zhangsan will buy what

‘Who wonders when will Zhangsan buy what?’

Although Chinese generally lacks overt *wh*-movement, sometimes for certain purpose a *wh*-phrase may be able to front. In (84), *shenmeshihou* ‘when’ raises to the left periphery of the embedded sentence; by analogy, the fronted *wh*-phrase might be also in the embedded [Spec, CP]. But, I have to exclude this possibility.

(85) a. Wo xiangzhidao shenmeshihou Zhangsan hui mai shenme.

I wonder when Zhangsan will buy what

‘I wonder when will Zhangsan buy what.’

b. Wo xiangzhidao shenmeshihou Zhangsan hui mai che.

I wonder when Zhangsan will buy car

‘I wonder when will Zhangsan buy a car.’

c. Wo xiangzhidao mingtian Zhangsan hui mai shenme.

I wonder tomorrow Zhangsan will buy what

‘I wonder Zhangsan will buy what tomorrow.’

Obviously, the available answers for (84) are totally the same with those for (82). This

fact seems to conflict with the frozen claim in that the answer (85c) should be blocked accordingly as the case of (81c). However, as in Wang (2001), overt movement of the *wh*-phrase in Chinese multiple *wh*-questions should not be categorized as genuine *wh*-movement but focus movement. Therefore, the question (84) should have the following representation, in which *shenmeshihou* focus-moves to [Spec, FP].

- (86) Shei xiangzhidao [_{CP} Q [_{FP} shenmeshihou_i [_{IP} Zhangsan t_i hui mai shenme?]]]
 Who wonder when Zhangsan will buy what
 ‘Who wonders when will Zhangsan buy what?’

It is not located in [Spec, CP] though it is also in the left periphery of the embedded sentence. This configuration will bring some direct advantages. First, it follows the observation found in English that once a *wh*-phrase moves into a [+*wh*] position, it will be frozen there. Since the *wh*-phrase *shenmeshihou* does not land in [+*wh*] [Spec, CP], it should not be frozen there and is answered. The mechanism that brings it to the matrix scope is either by succeeding *wh*-movement at LF (as in Huang 1982) or unselectively bound by Q operator in the matrix CP (as argued in Tsai 1999). Alternatively, it can also be in the embedded scope by either mechanism which results in being unanswered. Furthermore, this analysis is also compatible with the two minimalist considerations that I discussed in the above. Since the overt movement of *shenmeshihou* is categorized as focus movement, the succeeding LF *wh*-movement (in the sense of Huang 1982), if any, should not be blocked according to Epstein (1992). For feature checking, what is being checked when focus movement takes place is the [+focus] feature rather than the [+*wh*] one so the *wh*-phrase is still able to take the matrix scope and be answered.

By arguing that overt movement of a *wh*-phrase in Chinese is focus movement and lands in [Spec, FP], I find strong support for my analysis that the overt movement of the *wh*-phrase in Sluicing is in essence different from genuine *wh*-movement.

5.1.2. The Availability of the Single-pair Answer

The variation on the availability of the single-pair (comparing to the pair-list) answer in a multiple *wh*-question can also be support to my focus movement analysis. In English, as noted by Hornstein (1995) and Bošković (1999), a multiple *wh*-question like the following is obligatory to have a pair-list answer.

- (87) Who bought what?

A possible answer for (87) must be pair-wise which means answers must be in pairs, so a single-pair answer like (88b) is banned.

- (88) a. Mary bought a pen, John a book, Sue a pencil ...

b. Mary bought a pen. (not a possible answer for (87))

On the other hand, Bošković (1999) argued that Japanese and Chinese counterparts of (87) are not banned to have single-pair answers. The Japanese sentences, provided by Bošković (1999), are judged to have either pair-list or single-pair answers.

- (89) dare-ga nani-o katta no?
who-NON what-ACC bought Q
'Who bought what?'
- (90) John-wa dare-ni nani-o ageta no?
John-TOP who-DAT what-ACC gave Q
'Who did John give what?'

(Bošković 1999:160)

More radically, Nishigauchi (1998) provides an example in Japanese, showing that pair-list answer is even prohibited.

- (91) John-wa dare-ni Bill-ga nani-o tabe-ta to it-ta no?
John-TOP who-DAT Bill-NOM what-ACC eat-past that said Q
'Who did John tell that Bill has eaten what?'

(Nishigauchi 1998:128)

In addition to Japanese, Bošković (1998, 1999) also states that Chinese patterns with Japanese in the relevant respect, though he does not provide any example. Fortunately, I find that a pair-list answers is not obligatory in Chinese multiple *wh*-questions.

- (92) Zhangsan zui xiang gei shei shenmedongxi?
Zhangsan most want give who what-thing
'What did Zhangsan want to give who most?'

- (93) a. Zhangsan zui xiang gei Lisi shu.
Zhangsan most want give Lisi book.
'Zhangsan want to give Lisi a book most.'
- b. Zhangsan zui xiang gei Lisi shu, gei Wangwu bi.
Zhangsan most want give Lisi book, give Wangwu pen.
'Zhangsan want to give Lisi a book most, and give Wangwu a pen most.'

A multiple *wh*-question like (92) can have its answers like (93a) and (93b). The former is a single-pair answer while the latter a pair-list one. Similarly, the counterpart of (91) in Chinese is also preferred to have a single-pair answer.

- (94) Zhangsan gaosu shei Lisi xihuan chi shenmedongxi?
Zhangsan told who Lisi like eat what-thing
'Who did Zhangsan tell that Lisi has eaten what?'
- (95) a. Zhangsan gaosu Wangwu Lisi xihuan chi bing.
Zhangsan told Wangwu Lisi like eat ice
'Zhangsan told Wangwu that Lisi likes to eat ice.'
- b. ?? Zhangsan gaosu Wangwu Lisi zui xihuan chi bin, gaosu Zhaoliu Lisi zui
Zhangsan told Wangwu Lisi most like eat ice, told Zhaoliu Lisi most
xihuan chi shuiguo ...
like eat fruit ...
'Zhangsan told Wangwu that Lisi likes to eat ice, and told Zhaoliu that Lisi
likes to eat fruit ...'

With these demonstrations, it is clear that a multiple *wh*-question in Chinese does not have to be answered pair-wise. Single-pair list is always the other possible option or even the only possible one in some circumstance.

Building on Hagstrom's (1998) semantic analysis on multiple *wh*-constructions in *wh*-in-situ languages, Bošković (1998) suggests that a *wh*-moving and a *wh*-in-situ languages differ from each other in that, following the copy theory of movement, the former involves a deletion operation on the higher copy (i.e. the head of a chain) of the moved *wh*-phrase whereas the latter involves none for there is no movement. In other words, *wh*-phrases in both types are to be interpreted in-situ. Essentially, it is to minimize the difference on the interpretation of *wh*-constructions in different types of languages. The task to minimize the difference on interpretive operations is also suggested by Chomsky (1995:359) that interpretive operations at the interface should be as simple as possible. Keeping this in mind, the only thing that will destroy the single-pair answers and enforce pair-list readings in a *wh*-moving language like English undoubtedly lies in the overt *wh*-movement. In fact, Bošković (1998), following Hagstrom (1998), states that overt *wh*-movement (i.e. movement to the Specifier of CP) in *wh*-moving languages like English will interfere (i.e. to cross) the Q-morpheme that, as assumed by Hagstrom (1998), exists in C, resulting in the loss of single-pair answers in multiple *wh*-questions. In other words, a *wh*-moving language is obligatory to have a pair-list reading only. Since there is no overt *wh*-movement (i.e. no *wh*-component crosses C) found in Chinese example (92), the reason why Chinese allows the single-pair answer is explained. More surprisingly, when one of the *wh*-phrase is fronted in (92), the reading for the availability of answers does not change at all.

- (96) Shenmedongxi_i Zhangsan zui xiang gei shei t_i?
What-thing Zhangsan most want give who
'What did Zhangsan want to give who most?'

- (97) a. Shu Zhangsan zui xiang gei Lisi
book Zhangsan most want give Lisi.
'Zhangsan want to give Lisi a book most.'
- b. Shu Zhangsan zui xiang gei Lisi, bi Zhangsan zui xiang gei Wangwu⁶
book Zhangsan most want give Lisi, pen Zhangsan most want give Wangwu.
'Zhangsan want to give Lisi a book most, and give Wangwu a pen most.'

In (96), *shenmedongxi* 'what' has been fronted to the left periphery of the sentence. One may suspect that the fronted *wh*-phrase lands in [Spec, CP] since the counterpart in English sentence appears in the parallel position. However, the single-pair answer is still obtainable, which excludes the possibility that the fronted *wh*-phrase crosses C and is located in [Spec, CP]. Following the discussion so far, I conclude that it is in [Spec, FP] via a sort of focus movement like what I proposed for *wh*-remnants in Sluicing. This also supports my focus movement analysis.

Investigations on multiple *wh*-constructions not only shed light on my focus movement analysis but also show that focus movement is not a special operation seen only in Sluicing but a more general operation that can be found in other places.

5.2. Modifications of Licensing Condition and E Feature

The licensing condition on ellipsis, according to Saito and Murasugi (1990) and Lobeck (1990, 1995), is satisfied through the notion of Government in the way that an agreeing functional head licenses the ellipsis of its complement XP. However, Chomsky and Lasnik (1993) propose to eliminate the notion of Government in favor of notions such as Spec-head or Head-complement relations. Takahashi (1994) thus redefines the licensing condition on ellipsis in terms of Head-complement relation:

(98) An elliptical constituent must be a complement to an appropriate head.

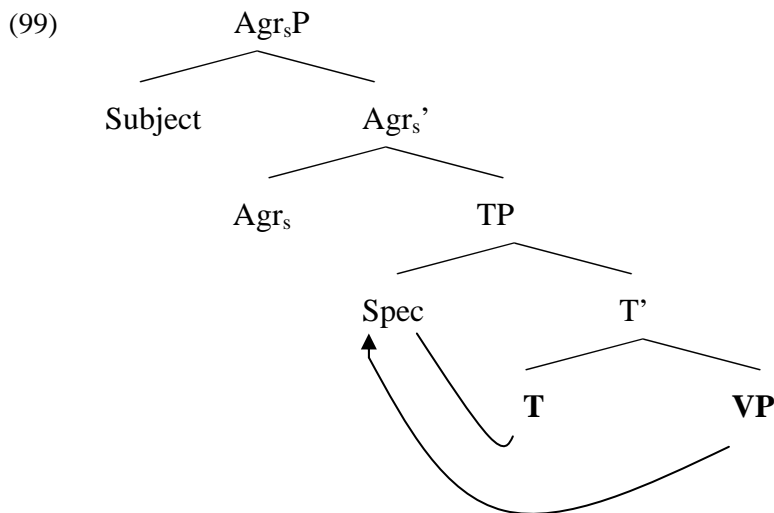
(Takahashi 1994: 277)

Although the reformulation captures the idea of replacing Government with Head-complement relation, I do not see much of importance from this since it is merely a rewriting of the condition. In later development of theoretical revision, Head-complement relation is even dispensed with in terms of feature checking. By hypothesis, Chomsky (1995) stipulates that feature checking requires a Spec-head or Head-head configuration. Following Chomsky (1995), Lasnik (1999a) further argues

NOTES

⁶ According to the intuition of some native speakers, when one of the *wh*-phrase undergoes overt fronting, the answer (97b) will be much less preferable. But it does not raise any problem to my analysis since the single-pair answer (97a) is still obtainable. In fact, the observation that (97b) is marginal follows the extended ideas of Hagstrom (1998) and Bošković (1998), but I will omit the discussion because it is not relevant here.

that Head-complement relation (i.e. Government) in structural case and theta-role assignment on an object can be replaced with feature checking mechanism in a Spec-head configuration with the help of Split-VP hypothesis (cf. Koizumi 1993). Possibly for this reason, Lobeck (1999a) proposes that the null category which is a complement to a licensing head undergoes movement to the Specifier of that head to satisfy a Spec-head configuration. In VP ellipsis, the elided VP, being null, must raise to [Spec, TP] and check with the licensing head T.



The landing site for the raised null VP is [Spec, TP], which should be free for the null VP since the subject is being in the [Spec, Agr_sP]. In this way, the Spec-head relation is satisfied and Government or even Head-complement is not necessary anymore. However, as noted by Merchant (1999), such an analysis is applicable only in the case of VP ellipsis. In Sluicing, the Specifier of the licensing head C in English is preoccupied by a *wh*-phrase and a focus-moved *wh*-phrase in Chinese lands in the Specifier of the licensing head F. So raising of the null IP should be forbidden accordingly. Moreover, her analysis also fails in the case of NP deletion. Following Saito and Murasugi (1990), the NP can be deleted with licensing of a head D, such as the possessive marker ‘s’ in English. This is shown in (100), in which NP deletion is allowed only with the appearance of ‘s’. Notice that *John* is assumed to raise from NP to the Specifier of DP and thus blocks the raising of the null NP.

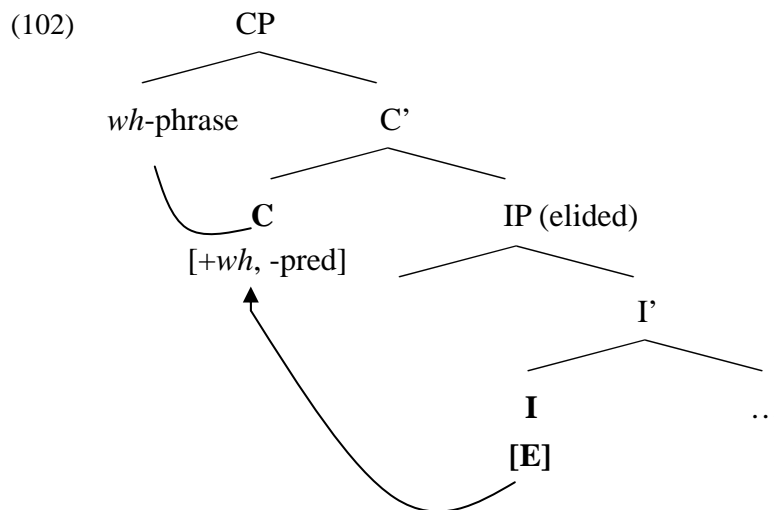
- (100)a. This book is John_i’s [_{NP} t_i ~~book~~].
 b. * This book is John ~~book~~.

Obviously, the recast cannot replace the original and invokes even more problems. Head-head relation then becomes the only one possible. Chomsky (1995:203) discusses the possibility that PF deletion can apply in ellipsis with expressions like (101):

- (101)a. John said that he was looking for a cat, and so did Bill.

- b. John said that he was looking for a cat, and so did Bill [_E say that he was looking for a cat.]

There is a marking E assigned in the elided category and this marking is further discussed in Chomsky (1995:252) where he states that this marking might be a bridge for the PF deletion operation and Parallelism requirement at LF. By the same token, Merchant (1999) proposes to recast the licensing condition by means of a Head-head relation of feature checking between the licensing head and the head of the elided XP. For Sluicing, the feature needed on the head of the elided IP can only be checked by a [+wh, -pred] C head in terms of the typology in Rizzi (1990:68). It is also the feature that triggers IP deletion at PF, and is also termed as E by Merchant (1999). By assumption, it moves from I to C, being checked in C, as shown in (102)⁷.



Merchant (1999) states that head movement of E from I to C is not the only option. Alternatively, E can start on C, not being moved from I, and E thus follows a feature compatibility requirement instead of feature checking. Although he mentions that he sees no reason to choose between these alternatives, I will argue that the E feature in elliptical constructions is originally generated in the head of the elided XP and then undergoes head-movement to the licensing head to check relevant features in a Head-head fashion. One reason is that it seems natural to assume that the feature that is marked as E whose purpose is to trigger PF deletion is right located in the head of elided maximal projection. That is, in a sentence involving ellipsis, E is supplied onto the head of the elided XP, identifying that the XP is being phonetically null at the interface of PF. E feature must then head-move to the one-node-higher licensing head in

⁷ The movement of E feature from I to C for checking relevant feature may have some direct or indirect relation with I-to-C movement (also known as Aux Inversion) in forming wh-questions. Bobaljik and Thráinsson (1998) mentions that there seems to have no account of why there should be such inversion. However, in spirit of E feature, Aux inversion might be explained since I to C is driven by certain kind of feature that needs to be checked in a [+wh] head.

order to check E feature, on one hand, and to achieve the goal of skipping the parsing of the elided XP at PF, on the other hand. After the head-movement of E feature to the licensing head, E feature takes the scope over the elided XP. Under this configuration, E dictates PF interface not to parse the constituent in its scopal domain, resulting in a deletion operation at PF. Merchant (1999) further assumes a strictly left-to-right algorithm of PF. In Sluicing, for example, E indicates that its sister IP is not to be prosodically incorporated into the PF structure at all after the raising of E to C (i.e. being left to the IP).⁸ The second reason in favor of the hypothesis that E moves comes from the investigation of Chinese Sluicing sentences. Note that there is an intervening projection FP between the elided IP and higher CP under my focus movement analysis. If E feature were base-generated in C, then the lower head F would play no role in licensing the ellipsis of IP. Recall that Merchant (1999) states that what to be checked between E feature and C is [+*wh*, -pred], but this only applies for Sluicing since only Sluicing involves a remnant *wh*-phrase. In terms of general licensing condition on ellipsis, I propose that E, by head movement, can check with a certain feature in a functional head and it is this checking mechanism that makes E eligible to license (or activate) the ellipsis of the complement at PF. This ensures that E feature analysis is compatible with other elliptical constructions. In this fashion, two kinds of features in E need to be checked in Sluicing. The first one concerns the licensing and the second [+*wh*, -pred]. In English, the checking operations finish in one step⁹ with head-movement of E feature to C; whereas Chinese utilizes I-to-F and succeeding F-to-C movement to achieve the same goal. This idea captures the insight of Chomsky (1995) as well as Merchant (1999) and keeps in accordance with my focus movement analysis. An immediate advantage for implementing E feature into ellipsis is the compatibility of LF Parallelism with PF deletion theory. The other is that it can account for *shi* support.

5.3. E Feature and Parallelism

One of the crucial factors in ellipsis is Parallelism. In the literature there are various kinds of Parallelism such as LF-structure Parallelism (Fiengo and May 1994, Fox 2000), semantically-equivalent Parallelism (Dalrymlpe, Shieber, and Pereira 1999), focus-based Parallelism (Rooth 1992, Tomioka 1997, Merchant 1999). All of them are

⁸ However, in some head-final languages, the left-to-right algorithm will be violated since E feature, being in a higher head, may occur in the right of the elided constituent. For this reason, I think that the structural consideration is still necessary. In other words, E feature, being in the one-node-higher licensing head, should issue an instruction to PF to skip the parsing of the complement in E's scopal domain.

⁹ It is argued in some works that *wh*-movement in English somehow involves focus force. In this sense, CP that hosts a *wh*-phrase in English seems to incorporate the function of FP. In Chinese, however, an extra FP in addition to CP is necessary if the *wh*-phrase have to focus-move since raising into [Spec, CP] overtly, as I argued in this paper, is never an option. The contrast here seems to be parallel to that of E feature checking in these two languages. Precisely, in English, E can be checked in one step in CP whereas in Chinese it takes two steps in FP and then in CP.

directly or indirectly related to the level of LF. Therefore, all kinds of Parallelism will face problems under PF deletion theory because there should be no connection between PF and LF after the split. In other words, it seems odd to assume that the operation of PF deletion is constrained by Parallelism that operates at LF.

As I mentioned, Chomsky (1995:203) proposes that there is an E marking in the elided constituent and further assumes that the marking takes place before Spell-Out (Chomsky 1995:253) in order to force the element marked as E to be subject to parallelism interpretation. Otherwise, if the marking were assigned after the split, a stipulation that there were some connection between PF and LF should be made. I thus conclude that there is an E feature supported before Spell-Out in elliptical sentences. That E feature is introduced before Spell-Out leads to a consequence that E exists both at PF and LF, which seems to be able to solve the conceptual problem. At PF, E must head-move to the higher head and accordingly licenses the ellipsis of the constituent in its scope. On the other side E is located in the head of an elided XP¹⁰ and requires the XP to have an interpretation parallel to its antecedent at LF. Only when this task succeeds can E feature be properly checked. In a descriptive view, the elided constituent must have an accessible antecedent that conforms to Parallelism¹¹. A well-formed sentence in Minimalism converges at both PF and LF, and so does a sentence that has E feature. In other words, E in the sentence must be checked at both levels, otherwise the sentence will be crashed.

5.4. *Shi* support

5.4.1. Contrast of *Shi* Support and Its Implications

The *wh*-argument in Sluicing is necessary to have *shi* support, otherwise it will result in ungrammaticality. On the other hand, the *wh*-adjunct is not obligatory to have *shi* support. Intuitively, the contrast shows an obvious asymmetry between argument and adjunct. The argument-adjunct asymmetry on *wh*-extraction has been widely discussed and particularly Huang (1982) concludes that *when*, *where*, *how*, and *why* all pattern together at S-structure, suggesting that there exist an argument-adjunct asymmetry when overt movement is taken into consideration. Two implications thus come out. First, the operation on the *wh*-phrase involved in Sluicing is likely to be overt movement, for the asymmetry patterns with overt movement. This implication is in fact related to a more theoretical issue; that is, does ellipsis in natural languages involve a deletion operation at PF or special copying mechanism taken place at LF? Since overt movement of *wh*-remnants is a crucial factor to choose PF deletion theory over LF

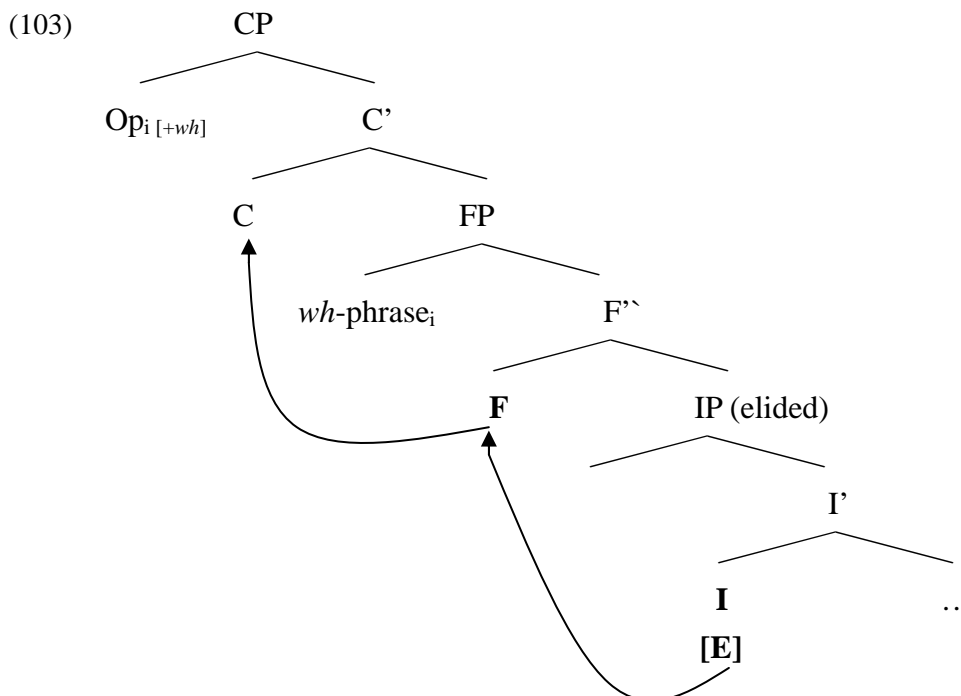
¹⁰ Alternatively, E can also move to the higher head at LF just like what happens at PF and thus dictates that the constituent in its scope must access an antecedent that obeys Parallelism. For the relevant discussion here, I find no obvious advantage for either to be preferred over the other.

¹¹ In the discussion here, to choose which definition of Parallelism does not make any difference since all kinds of Parallelism is definitely active at the level of LF.

copying one, the question is answered. This second implication suggests that the necessity of *shi* support in the *wh*-argument case may be explained by investigating the launching site. Before proceeding, I will discuss the possible mechanism that derives *shi* support in the grammar.

5.4.2. *Shi* Support – Where and When?

As far as *shi* support is concerned, it is assured that *shi* can undoubtedly appear in all Sluicing sentences. To facilitate discussion, I will temporarily assume that *shi* support is the default case. *Shi*, being preceding the remnant *wh*-phrase and following the matrix verb, must be located in the head C. Remember that I have also discussed E feature as well as its movement to a higher head. This conception is likely to be the mechanism that drives *shi* support because E eventually lands in C.



E here moves from I via F to C. The movement opens two possible options for the base position of *shi*; that is, I and F. The third option would be C but it should be excluded since *shi* in Chinese is never base-generated in C. The exclusion of base-generation in C leads to a consequence that *shi* must be moved to C via a sort of head movement. I thus assume that *shi* is realized on one of the two heads at certain stage of the derivation and then is pied-piped to C together with the head-movement of E feature.

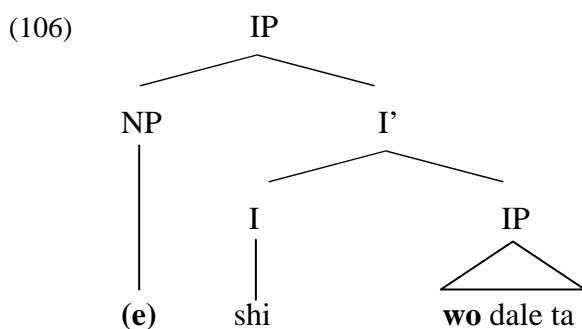
The choice between the two options is a hard task since either choice has its own advantage. Before choosing one for my analysis, it is better to discuss advantages on both respectively. First, assuming *shi* is realized in I and then accompanies head movement of E via F to C. Actually, some works such as Huang (1988) argue that *shi* is similar to an epistemic modal, such as *yinggai* ‘epistemic should’ and *keneng* ‘epistemic

should' and it is located in I. Consider the following sentences:

(104) *Wo shi dale ta*
 I be beat him
 Lit. 'I did beat him.'

(105) *Shi wo dale ta*
 Be I beat him
 Lit. 'It is me who beat him.'

Huang (1988) argues that difference lies between (104) and (105) is not movement of *shi* but that of the subject *wo* 'I', as shown in (106):



In this diagram, *wo* can either move to the Specifier of the higher IP or stays in-situ, resulting in two possible outputs as in (104) and (105). He further mentions that the two sentences are equivalent in terms of the argument structure but different in terms of focus. Precisely, when *wo* does not move, the focus falls on the whole sentence or on subject *wo* whereas when *wo* moves, the focus turns to be the VP [*dale ta*] 'beat him'. He comes up with a principle that the focus always falls on the constituent that is directly governed by *shi*. This analysis successfully captures the syntactic distribution of *shi* and its interaction with other constituents¹². It also accounts for the similarities between modal and *shi*. Under this account, *shi* in Sluicing is first realized in I and then pied-piped with the successive cyclic head-movement of E feature to C.

The other option defines that *shi* is realized in F and then, together with E feature, undergoes head movement to C. Precisely, E moves to F for licensing ellipsis and then accompanies *shi* to C for relevant feature checking, say [+*wh*] feature. The realization of *shi* on F is not a mere stipulation since in many instances we can see the occurrence of *shi* in F. Particularly, Wu (2002) utilize the notion of FP above VP (cf. Tsai 1999, Jayaseelan 1999)¹³ to account for VP ellipsis in Chinese, as shown in (107) and (108):

¹² However, as pointed out by Tsai (p.c.), it seems odd to say that movement of the subject will shift the focusing effect to other elements. Specifically, the movement of *wo* leads [_{VP} *dale ta*] to be focused. What is odd is that the front of *wo* does not make itself be focused, which seems contrary to other constructions in which focus movement makes the moved element to be the main focus of the sentence.

¹³ The possibility that there is a FP in the left periphery of a sentence has been explored by Rizzi (1997).

(107)Zhangsan kanjianle tade mama, Lisi ye [VP kanjianle tade mama].
Zhangsan saw his mother, Lisi also saw his mother
'Zhangsan saw his mother, and Lisi saw his mother, too.'

(108)Zhangsan kanjianle tade mama, Lisi ye [FP **shi** [VP e]].
Zhangsan saw his mother, Lisi also be
'Zhangsan saw his mother, and Lisi does, too.'

(Wu 2002)

Under focus-based account of VP ellipsis, *shi* is assumed to be realized in F and thus, being a functional head, licenses the ellipsis of its complement VP. The reasons to assume *shi* in F include that *shi* usually plays a role as an emphatic (focus) marker, and that *shi* always occurs in sentences involving focus effect, such as cleft constructions. It seems that this option (i.e. *shi* in F) is more compatible to my focus movement analysis. In fact, as argued in Rooth (1992), Tomioka (1997), and Merchant (1999), ellipsis constructions always involve certain focus force so that the realization of this force in syntax can be formalized as an introduction of focus projection upon VP in the case of VP ellipsis and upon IP in Sluicing. This seems to be a natural inference and bridges semantics and syntax. Thus, I will utilize the latter one (i.e. *shi* in F) in later discussion.

Another important issue is at what stage of the derivation is *shi* introduced? This question is directly related to a well-studied issue of *do* support in English, since *do* support and *shi* support has many ways alike. The similarities between them have also been explored in Huang (1988). First, both *do* and *shi* can serve as an emphatic marker.

(109)Wo **shi** kanjianle wangxiaojie.
I do/be saw Miss Wang
'I did see Miss Wang.'

(110)I **did** see Miss Wang.

(Huang 1988:54)

The comparison between these two sentences shows surprising parallelism on the distribution and the function of *do* and *shi*. Second, in VP ellipsis construction, *do* also exhibits similarity with *shi*.

(111)Zhangsan hen xihuan lixiaojie, wo ye **shi** [VP e].
Zhangsan very like Miss Li, I also do/be
'Zhangsan likes Miss Li very much, and so do I.'

(112)John comes every day, and so **does** Bill [VP e].

(Huang 1988:55)

From the above, it is clear that *do* and *shi* support are very much alike. Similar to the choice of the base position for *shi*, there are also two possibilities in this point. First, *shi* is introduced in the numeration and merged into a head before Spell-Out. The second one is that *shi* is inserted (supported) at PF. The first one follows “the condition of inclusiveness” (Chomsky 1995:228). To put it simply, no new objects can be added after Spell-Out. The second one, though an apparent violation to the condition of inclusiveness, has been elucidated in various works. Especially in Bobaljik (2002), he argues that *do* support in English is in fact a PF process. His argument is mainly based on *do* in negation and VP ellipsis in English.

- (113)a. [IP Sam [I' -s] not [VP eat- ham]].
 b. O ----- * ----- O ← Adjacency Disrupted
 c. ∅ → *do* ← *do* insertion
 d. Sam does not eat ham.

(Bobaljik 2002:211)

In (113), the adjacency of affix *-s* and verb *eat* is disrupted by negation element *not* and this disruption of adjacency blocks the Affix Hopping (in the sense of Chomsky 1955) of *-s* and *eat*. Arguably, the hopping is a PF process and in later works it is termed as PF-merger (cf. Halle and Marantz 1993, Bobaljik 1994, Lasnik 1995, 1999). The logic is that *do* insertion applies when PF-merger fails, so *do* support must be also a PF process. For VP ellipsis, *do* support is arguably a PF process, too.

- (114)a. Sam [VP left on Thursday] even though Sam [VP left on Thursday] too].
 b. * Sam [VP left on Thursday] even though Sam [VP e] too]. ← PF deletion
 c. Sam [VP left on Thursday] even though Sam [VP **does**] too]. ← *do* insertion
 d. Sam left on Thursday even though Sam does too.

Since *do* is to be inserted after deletion (at PF) applies, *do* support must then be an operation at PF. These are the reasons with which Bobaljik (2002) argue for the existence of *do* support at PF.

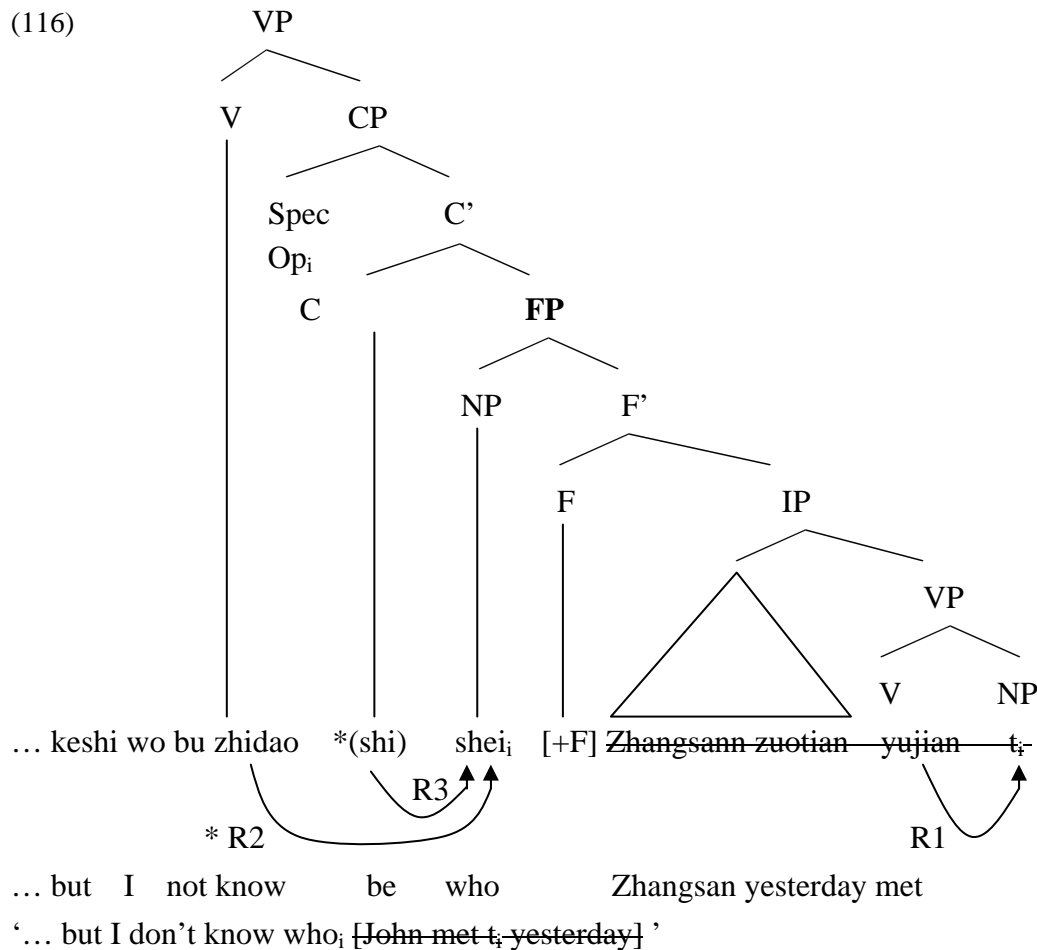
5.4.3. Necessity of *Shi* Support - Grammatical Relation Destroyed by Deletion

The necessity of *shi* support in *wh*-arguments arises from IP deletion.

- (115) Zhangsan zuotian yujian mouren, keshi wo bu zhidao *(**shi**) shei; Zhangsan
 Zhangsan yesterday met someone, but I not know be who Zhangsan
 zuotian—yujian t.
 yesterday meet

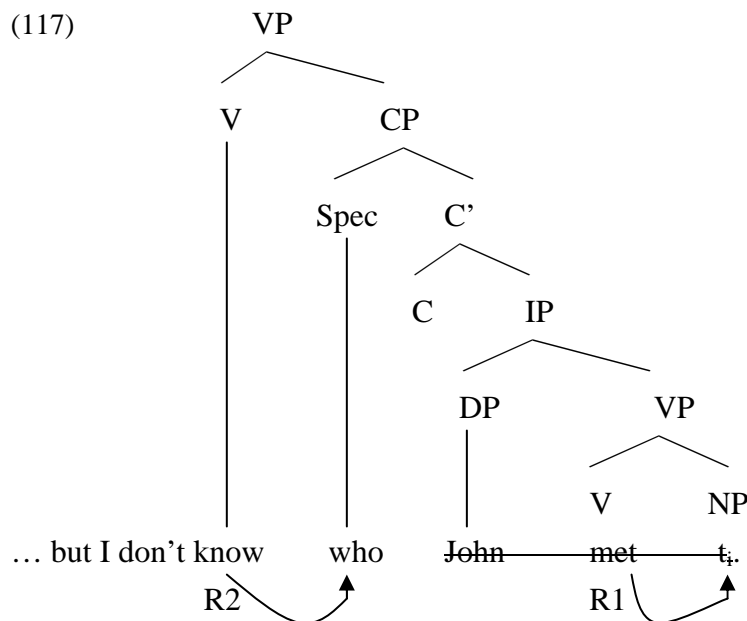
‘Zhangsan met someone yesterday, but I don’t know who did Zhangsan met yesterday.’

In (115) where IP deletion applies, only when *shi* is supported can the sentence be grammatical. On the contrary, the support is optional for Sluicing with *wh*-adjuncts. The contrast exhibits a parallel phenomenon to argument-adjunct asymmetry, which implies that the reason can be explored from the launching site of the *wh*-phrase. I then have a working idea on the necessity of *shi* support. First consider the diagram.



Shei focus-moves to [Spec, FP] and leaves behind a trace in its launching site. A displaced phrase and its trace have certain kind of connection under standard assumption, since the trace always plays a crucial role in identifying and interpreting the displaced, as discussed in the formalization of empty category principle (Chomsky 1981, Rizzi 1990) and copy theory of movement (Chomsky 1993, 1995). Back to the issue, *shi* is necessary only when the IP which contains the trace is deleted. I think it is because deletion destroys certain grammatical relation upon the trace. As shown in the diagram, there is a relation, say R1, built between the verb *yujian* ‘met’ and the trace t_i . When IP deletion does not happen, the relation is not changed at all so that *shi* support is not obligatory. But when the IP is deleted, the trace of *shei* is gone accordingly. At this point,

shei loses certain property and can only be salvaged by some kind of relation which is similar to R1. Unfortunately, *shei*, being at [Spec, FP], cannot be salvaged by the R2 built with the matrix verb *zhidao* for there is one intervening node CP. The only solution available is R3 built with the help of *shi* support. Recall that *shi*, as I argued, is first realized in F and then accompanies the movement of E feature to C. Eventually, the relation that is destroyed by deletion operation is then recovered by *shi* support. Moreover, this analysis is also compatible with English counterparts.



In English, the landing site for *wh*-movement is [Spec, CP], so there is no support necessary even when R1 is destroyed. It is because *who* is located in [Spec, CP] and the destroyed R1 can be immediately recovered by R2 built between *know* and *who*. The configurational difference between Chinese and English here is actually related to the issue that the landing sites for the overt movement of *wh*-phrases in these languages are essentially different. Chinese utilizes focus movement as well as focus projection in overt movement of *wh*-phrases but English does genuine *wh*-movement.

Throughout the discussion, I have not touched an important issue as to what the destroyed relation is. In GB framework, it is known as Case Marking between a verb and an object and is built in terms of Government notion. However, the notion of Government is dispensed with in later theoretical development. Particularly in Chomsky (1995) and Lasnik (1999a), they argue that an object must raise to [Spec, Agr_oP] with the raising of the verb to Arg_o to check Accusative case in a Spec-head configuration and then the verb moves again to a higher V, resulting in a VO word order. On this account, the so-called Case Marking has been redefined in a Spec-head relation instead of Government or Head-complement one. Obviously, this is contrary to my analysis¹⁴

¹⁴ In fact, whether Chinese has an Agr_o projection is not uncontroversial. An alternative is that there is no

because the relation that is destroyed seems to be in a Head-complement configuration. However, from a theoretical point of view, PF is defined as an interface level of articulatory-perceptual system. Therefore, the sentence at PF will become linearized at the end of derivation and deletion operation only affects a set of linearized elements in terms of output condition. In this view, the support of *shi* to build new relation can still prevent the derivation from being crashed at PF, since it recovers what just has been destroyed. This account also captures the notion of case filter in GB framework, since the criterion, being a filter, must be an output condition that should be applied at the level of PF.

An immediate counterexample regarding a subject *wh*-argument may emerge since there is no such ‘verb-marked’ relation in the subject position. So we should predict that *shi* support is not necessary in a case like that. However, the prediction is contrary to the fact, as in (118) where *shi* support is still necessary.

(118) you ren zhongle letou, keshi wo bu zhidao *(**shi**) shei
 have person win lottery but I not know be who
 ‘Someone wins the lottery, but I don’t know who.’

Nevertheless, note that the correlated antecedent is always an indefinite. When an indefinite appears to be a subject, it must co-occur with a modal *you* ‘have’. Without *you*, the sentence will be ungrammatical, as in (119). The occurrence of *you* may account for the necessity of *shi* support in a subject *wh*-argument.

(119)* ren zhongle letou, keshi wo bu zhidao shi shei
 person win lottery but I not know be who
 Lit. ‘Someone wins the lottery, but I don’t know who.’

To say that deletion for some reason destroys settled grammatical relation seems to be a speculation but in some cases, deletion does make things different.

5.4.4. Island Repair - Grammatical Violation Salvaged by Deletion

In Sluicing, *wh*-dependencies can cross certain projections that are otherwise barriers to movement when deletion operation applies. This is so-called island repair. Interestingly, island repair remedies grammatical violation whereas the issue in the last section invokes grammatical violation. In a broader view, both are to change the status of certain grammatical principle. In the classical analysis, Ross (1969) presents some examples to show that deletion can ameliorate island violation in Sluicing.¹⁵

object shift (i.e. object raising to AgroP) in Chinese. If the alternative is right, the problem discussed in the following should be nullified.

¹⁵ Ross (1969) judges those Sluicing sentences that involve islands to be marginal, but those without deletion operation (i.e. fully spelled out) to be fully ungrammatical. An apparent amelioration is thus

(120) I believe the claim that he bit someone, but they don't know who_i (* I believe the claim that he bit t_i.)

(121) Irv and someone were dancing together, but I don't know who_i (* Irv and t_i were dancing together.)

Remember that the mechanism with which Ross (1969) utilizes to account for Sluicing is a deletion operation following *wh*-movement, so it seems that deletion remedies the island violation. However, this account encounters a challenge in CLM (1995). They observe that island repair does not occur in VP ellipsis.

(122)* What_i did you leave before they started playing t_i.

(123) We left before they started playing party games. * What did you leave before they did.

(CLM 1995:275)

They thus conclude that VP ellipsis is derived from the PF deletion operation while Sluicing, on the contrary, involves LF copying. Since no movement is involved under LF copying theory, island violation is accordingly nullified. This is an apparent objection to the assumption that deletion remedies island violations. Nevertheless, Fox and Lasnik (2001) observe that sometimes VP ellipsis remedies island.

(124) Speaker A: We should hire John since he knows how much every item in this store costs.

Speaker B: I think that's not necessary. * I know how much every item costs that John knows how much t_i costs.

(125) Speaker A: We should hire John since he knows how much every item in this store costs.

Speaker B: I think that's not necessary. ? I know how much every item costs that John does ~~knows how much t_i costs.~~

In the sentence uttered by Speaker B, that an element, say *that*, moves out of the *wh*-island creates island violation, as in (124). But when VP ellipsis applies, the sentence, as in (125), changes from being ungrammatical to marginal according to their intuitions. They thus argue that Sluicing and VP ellipsis are both constructed from the PF deletion operation and their difference on island repair is only a matter of size in the elided constituent. Precisely, deletion is generally able to repair island violation but it is possible only when certain category (i.e. the island node in Chomsky's (1972) sense) is

derived. However, in later works such as CLM (1995), Merchant (1999, 2001) and Fox and Lasnik (2001), they all consider those marginal sentences as fully grammatical.

eliminated as well.¹⁶ Merchant (1999, 2001) also argues for the ability of deletion to remedy island violation. Unlike CLM (1995), he is in a same position with Fox and Lasnik (2001). He proposes a constraint MaxElide which defines that ellipsis should target the largest constituent possible. That is, if deletion of an IP containing A'-trace is possible then in that sentence deletion of the smaller constituent, say VP, should be blocked. But MaxElide itself is not enough. Chomsky (1972) defines that a crossed island node are marked with some PF-uninterpretable feature, call it *, and an output condition blocks such a feature, resulting in violation. Merchant (2001:11) recasts this idea and defines that once an island node is crossed, all new copies of trace (in Barriers' fashion) are given the *-feature. To remedy island violation, all *-features must be eliminated by deletion and MaxElide must be respected as well. All these provide arguments for that deletion can repair island, and I also observe that island repair occurs in Chinese Sluicing.

- (126)* laoshi zhe xueqi dangle yige ren de xiaoxi xiahuaile women,
 teacher this semester flunk a person DE news frighten us
 keshi women duo hai bu zhidao shi shei [laoshi zhe xueqi dangle
 but we all still not know be who teacher this semester flunk
 yige ren de xiaoxi xiahuaile women].
 a person DE news frighten us
 ‘* The news that the teacher has flunked someone frightens us, but we all still
 don’t know who_i [the news that the teacher has flunked t_i frightens us].’
- (127) laoshi zhe xueqi dangle yige ren de xiaoxi xiahuaile women,
 teacher this semester flunk a person DE news frighten us
 keshi women duo hai bu zhidao shi shei
 but we all still not know be who
 ‘The news that the teacher has flunked someone frightens us, but we all still
 don’t know who.’
 don’t know who_i [the news that the teacher has flunked t_i frightens us].’

In (126), the sentence is fully spelled out and is severely bad since the extracted element *shei* crosses an island. Oppositely, the Sluicing counterpart (127) is well-formed. This shows that island repair is also a property of Sluicing in Chinese.

Island repair is observed in both English and Chinese. It demonstrates that deletion destroys grammatical violation, leading to an ameliorative effect termed as island repair. In my working idea, deletion destroys a grammatical relation that needs to be repaired by *shi* support. Generally, both phenomena change the grammatical relation. In this

¹⁶ Fox and Lasnik (2001) also adopt the ideas of Barriers (Chomsky 1986) and Parallelism in terms of LF-structure isomorphism. These ideas together account for not only island repair phenomenon but also the case in which VP ellipsis degrades sentences even when there is no violation in the first place. However, I will not go into the details here.

logic, island repair offers support to my analysis in that deletion can change the status of grammatical relation, either by destruction or by salvation.

5.5. Why PF?

So far I have discussed the analysis based on PF deletion theory and skipped the LF copying one. Recall that I have briefly reviewed the most recent influential LF approach, that of CLM (1995). In that paper, an elliptical construction like Sluicing is first spelled out as what it is so there is no superfluous operation at PF. For interpretative purpose, there are various operations at LF. Therefore, the *wh*-remnant in Sluicing does not undergo movement and is assumed to be base-generated in [Spec, CP]. This account, however, is problematic in application to Chinese.

First, LF copying theory requires that the base-generated *wh*-phrase be in [Spec, CP] and this requirement invokes a serious problem. Namely, there will be no position for *shi* to fill in. As I discussed, the matrix verb must be right adjacent to the embedded CP, so when the *wh*-phrase is base-generated in [Spec, CP], there is definitely no position to host *shi*. Another drawback is that a *wh*-phrase in Chinese is never located in [Spec, CP]. In fact, as I demonstrated in the discussion of multiple *wh*-constructions, a *wh*-phrase in Chinese should not be in [Spec, CP] overtly otherwise the answerability of fronted *wh*-phrase in an embedded sentence should not be allowed and the single-pair answer should be lost.

Even if *shi* cannot be supported overtly, there are still two options, being at LF or PF, for *shi* to be inserted. However, either one should be rejected. If *shi* were supported at LF, it could not be realized at PF and thus hearable. On the other side, *shi* support is also blocked at PF because LF copying theory does not postulate any operation at PF.

The third problem is that the asymmetry of *shi* support should not be expected in Sluicing under the LF copying account because base-generation should not choose whether or not *shi* has to be supported. On the opposite the PF deletion approach can at least explain this asymmetry in terms of argument-adjunct contrast observed in overt movement. All these problems can be integrated in one: *shi* support makes LF copying theory inapplicable in Chinese Sluicing.

CLM (1995) argue that LF copying should be preferable over PF deletion for two major reasons. The first is island insensitivity in Sluicing and the second interpretation of the *wh*-phrase. Since they consider that island insensitivity is only observed in Sluicing but not in VP ellipsis, they thus argue that they are constructed with different mechanism. Namely, Sluicing is from LF copying whereas VP ellipsis from PF deletion. However, following Merchant (1999, 2001) and Fox and Lasnik (2001), island insensitivity has been proved to be a property of deletion operation. Besides, island violation is sometimes repaired by VP ellipsis, proving that deletion generally repairs island violation. For the interpretation, the LF copying operation duplicates the antecedent and yields an indefinite in the empty IP, which is naturally compatible with

the need of interpretation and Parallelism. Overt movement of the *wh*-phrase in PF deletion theory seems to be problematic in this perspective since it leaves behind a trace instead of an indefinite. However, as mentioned by Fox and Lasnik (2001), this problem should be nullified because something similar to an indefinite in the position of trace is a natural consequence of the copy theory of movement.

Particularly in Chinese, *shi* plays a fundamental role to nullify the base-generation hypothesis of the *wh*-phrase in Sluicing and the reasons that motivate LF copying theory also fall naturally under the PF deletion account as well. The PF deletion approach is thus preferable to the LF copying one.

6. Concluding Remarks

This paper focuses on Sluicing in Chinese under PF Deletion theory and argues that Sluicing in Chinese is constructed from overt focus movement followed by a deletion operation at the level of PF. I also present arguments to show that focus movement does not only occur in Sluicing but also appears in other constructions such as simple sentences and the multiple *wh*-construction.

In the analysis, I adopt the notion of focus to explore elliptical constructions. Intuitively and semantically, the remnant and the elided in an elliptical construction seem to contrast with each other in terms of focus. A focused part always carries new information whereas the unfocused counterpart carries only old information. To elide the unfocused part that carries only old information is in fact the reason why ellipsis is triggered. On the syntactic side, I utilize the notion of focus projection and focus movement in order to capture this intuition. The intuition and other facts shown in this paper lead me to believe that focus is the right way to deal with ellipsis.

However, the explanation of *shi* support based on E feature account (cf. Merchant 1999) that I tentatively work out is a working hypothesis and needs further investigation. *Shi* support in Chinese Sluicing is in many parts a mystery and is just like the mystery of empty in ellipsis.

All in all, Sluicing in Chinese (as well as the English counterpart) leaves many mysteries and further investigation is needed to attain a fully satisfactory account. But focus is always a good way to deal with it.

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