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Wh-movement and the syntax of sluicing[1]

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Sluicing – the elliptical construction in which all of a constituent question goes missing except for the interrogative phrase – is commonly analyzed as involving movement of the interrogative phrase to Spec-CP followed by deletion of TP (Ross 1969, Merchant 2001). In this paper, I examine how well the movement-plus-deletion analysis extends to Farsi, a *wh*-in situ language that, surprisingly, has a sluicing construction nearly identical to its English counterpart. I argue that the interrogative phrase in Farsi sluicing escapes deletion not by *wh*-movement as in English but by a type of focus movement. This operation, which normally applies very generally and is optional, is restricted in sluicing contexts in two ways: (i) it is obligatory, and (ii) it only applies to interrogative phrases. I propose a formal implementation that integrates these two properties into the licensing requirement on deletion, advancing the current understanding of the syntax of sluicing.

1. Introduction

The ellipsis process SLUICING has been the object of much attention in the literature on English since Ross introduced the construction in his seminal 1969 paper. A canonical example of sluicing is given in (1).

(1) Tobey met someone at the party. Guess who. English

Intuitively, the interrogative phrase in the second clause is understood as part of a constituent question, identical in some sense to the first clause, that has gone missing. The sluice in (1), in other words, has the same meaning as the fully pronounced constituent question in (2).

(2) Guess [$_{CP}$ who [$_{TP}$ Tobey met ⟨who⟩ at the party]].

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One strand of research, represented by Ross (1969), Merchant (2001), and others, has sought to relate the structures in (1)–(2) derivationally.[2] Under this MOVEMENT–PLUS–DELETION approach, sluices start out life as fully formed constituent questions. A deletion operation subsequently removes everything in the constituent question except for the interrogative phrase. For Merchant, the TP of the constituent question in (2) is deleted at PF to yield the sluice in (1).

From this perspective, the fact that the *wh*-phrase survives deletion is purely accidental. Sluicing is the predictable outcome of combining two independent processes in a single derivation: *wh*-movement and deletion of TP. *Wh*-movement is an obligatory operation that moves the (highest) *wh*-phrase of a clause to Spec-CP whether or not the rest of the clause later goes missing. Deletion applies whenever there are multiple occurrences of a single expression. In addition to sluicing, it is active in other elliptical constructions, such as verb phrase ellipsis and noun phrase ellipsis. Landau (2006: 33) even suggests that the same PF process is responsible for deleting those occurrences of a movement chain that are not pronounced.

What would sluicing look like in a *wh*-in situ language, a language that does not obligatorily move *wh*-phrases to clause-initial position? We can imagine a language English′ that is identical to English in every respect except for being *wh*-in situ. The movement-plus-deletion approach predicts that sluicing in English′ will look like (3).

(3) Guess [$_{CP}$ [~~$_{TP}$ Tobey met who at the party~~]]. English′

Since the interrogative phrase does not move from its base position, deletion of TP results in the entire constituent question – including *who* – going missing. Only the question-embedding verb is left.

My purpose here is to explore sluicing in a real *wh*-in situ language, Farsi (the variety of Persian spoken in Iran), to see whether or not it looks like its hypothetical English′ counterpart. Just looking at (4), we can see that it does not.[3]

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[2] In addition to the movement-plus-deletion approach advocated by Ross and Merchant, there is an alternative tradition, represented by Chao (1987), Lobeck (1995), and Chung et al. (1995), that considers the empty category in ellipsis constructions to be a null proform that receives its interpretation at LF. Culicover & Jackendoff (2005: 266–272) propose a similar analysis. For reasons of space, I will not attempt to engage with this literature here. For criticisms of the LF copying approach that I find convincing see Merchant (2001: 146–152) and Romero (1998: 6–71) on sluicing and Goldberg (2005: 160–168, 199–208) on verb phrase ellipsis.

[3] I use the following abbreviations in this paper: ACC – accusative, EZ – Farsi *ezāfe* suffix (see fn. 10), IND – indefinite, NEG – negation, NOM – nominative, OBJ – Farsi differential object marker (see section 2.1), PRES – present, PV – Hungarian preverbal element, Q – question particle, REL – relativizer, TOP – topic.

The Farsi judgments in this paper were obtained from four native speakers residing in Tehran, Iran and the United States. Their speech represents the colloquial variety of the language spoken in Tehran. When examples from other sources are cited, I have taken the liberty of retranscribing and reglossing them.

(4) rāmin ye chiz-i xarid. hads bezan chi.
Ramin one thing-IND bought.3SG guess hit.2SG what
'Ramin bought something. Guess what.' Farsi

Instead, Farsi has a construction that is identical on the surface to sluicing in English. In both languages, sluicing leaves behind an interrogative phrase – despite the fact that English is an obligatory *wh*-fronting language and Farsi is *wh*-in situ. In the constituent question corresponding to the sluice above, the *wh*-phrase *chi* 'what' does not raise out of TP:

(5) hads bezan [$_{CP}$ [$_{TP}$ rāmin chi xarid]].
guess hit.2SG Ramin what bought.3SG
'Guess what Ramin bought.'

Nonetheless, I will argue that, as in English, sluicing in Farsi is derived by movement of the interrogative phrase followed by deletion.

In this paper, I first present the basic facts of Farsi sluicing in section 2. I examine and reject two alternative analyses – stripping and clefting – before providing evidence that the interrogative phrase in a sluice attains its position by movement. Section 3 explores the syntactic and semantic properties of FOCUS FRONTING, the movement operation that I argue derives sluicing. The core of my proposal is presented in section 4. Sluicing in Farsi uses focus fronting to move an interrogative phrase out of the deleted constituent. In sluicing contexts, this movement must apply obligatorily and only to *wh*-phrases. These two properties of sluicing are derived formally in section 5. The conclusion follows in section 6.

2. BASIC DATA AND DEFINITIONS

I would first like to introduce some terminology from the ellipsis literature that will make talking about sluicing easier. The original English example from the introduction is reproduced below:

(6) Tobey met someone at the party. Guess [$_{CP}$ who ~~[$_{TP}$ Tobey met ⟨who⟩ at the party]~~].

I will refer to the interrogative phrase that occurs where a constituent question is expected, *who* in (6), as the REMNANT. The part of the constituent question that has gone missing, here struck through, is the TARGET. Together, the remnant and the target comprise the SLUICE. For a sluice to be grammatical, the target must be identical, in some sense, to the corresponding part of an ANTECEDENT clause. The antecedent clause may contain an overt constituent corresponding to the remnant. This constituent, *someone* in the example above, is the CORRELATE.

Turning now to Farsi, a language with SOV word order, I give several examples of the construction that is the subject of this paper in (7)–(14).

(7) kesi man-o hol dād vali ne-midunam ki.
someone me-OBJ push gave.3SG but NEG-know.1SG who
'Someone pushed me, but I don't know who.'

(8) mahin ye chiz-i xaride vali be sohrāb ne-mige chi.
Mahin one thing-IND bought.3SG but to Sohrab NEG-say.3SG what
'Mahin bought something, but she didn't tell Sohrab what.'

(9) emruz ye film-i-ro didam. hads bezan che film-i-ro.
today one movie-IND-OBJ saw.1SG guess hit.2SG what movie-IND-OBJ
'I saw a movie today. Guess what movie.'

(10) mixāstam yeki-shun-o bexaram vali ne-midunestam kodum-esh-o.
wanted.1SG one-them-OBJ buy.1SG but NEG-knew.1SG which-them-OBJ
'I wanted to buy one of them, but I didn't know which.'
(Massy Azimian, 16 January 2007)

(11) rostam māshin-o taamir karde vali maalum nist kojā.
Rostam car-OBJ repair did.3SG but clear NEG.is where
'Rostam repaired the car, but it's not clear where.'

(12) rostam māshin-esh-o furuxt. yād-esh nist kei.
Rostam car-his-OBJ sold.3SG memory-his NEG.is when
'Rostam sold his car; he doesn't remember when.'

(13) navid javāher-o dozdide vali na-goft chetor.
Navid jewels-OBJ stole.3SG but NEG-said.3SG how
'Navid stole the jewels, but he didn't say how.'

(14) unā ham ajale dārand. ne-midunam cherā.
they also rush have.3PL NEG-know.1SG why
'They, too, are in a rush. I don't know why.'
(Abbas Toosarvandani, 21 January 2007)

In these examples, a number of different question-embedding predicates, including *dānestan* 'to know', *goftan* 'to say', *hads zadan* 'to guess' (lit. 'guess'+'to hit'), *maalum budan* 'to be clear', and *yād budan* 'remember' (lit. 'memory'+'to be'), license a variety of remnants. Any of Farsi's *wh*-words, listed in (15), can serve as the remnant.

(15)

ki	'who'
che/chi	'what'
che NP-*i*	'what NP'
kodum NP	'which NP'
kojā	'where'
kei	'when'
chetor	'how'
cherā	'why'

Some of the *wh*-words are morphologically complex, e.g. *chetor* 'how', which is composed of *che* 'what' and *tor* 'manner'.

Before going further, we should check to make sure that the construction illustrated in (7)–(14) is, in fact, a type of ellipsis and not stripping (also called bare argument ellipsis), e.g. *Suzanne plays cello, and Michael too*, where everything in the second conjunct goes missing except for the single constituent *Michael*. There are two properties of stripping that distinguish it from sluicing and the other ellipsis constructions, verb phrase ellipsis and noun phrase ellipsis (Lobeck 1995: 20–28). First, stripping is ungrammatical in embedded contexts (16), while sluicing is fine in this environment (17).

(16) *Suzanne plays cello, and I think that Michael too. stripping
(17) Suzanne plays something, but I don't think she ever told me what. sluicing

The sluicing construction in Farsi, too, can be embedded, as shown in (18).

(18) in ketāb tu qarne nunzda neveshte shode va fekr
this book in century nineteen written became.3SG and thought
mikonam ke midunam tavasote ki.
do.1SG that know.1SG through who
'This book was written in the nineteenth century, and I think that I know by whom.'

Second, stripping cannot occur before its antecedent, as illustrated in (19). This contrasts with sluicing which, as shown in (20), can precede its antecedent as long as it does not command it. (This is the Backwards Anaphora Constraint of Hankamer & Sag 1976: 424.)

(19) *Michael too, and Suzanne plays cello. stripping
(20) I don't know what, but I'm sure Suzanne plays something. sluicing

In Farsi, a sluice is also able to precede its antecedent, e.g. (21).

(21) ne-midunam chi-ro amma midunam ke sohrāb
NEG-know.1SG what-OBJ but know.1SG that Sohrab
ye chiz-i-ro xaride.
one thing-IND-OBJ bought.3SG
'I don't know what, but I know that Sohrab bought something.'

Now that we know that Farsi definitely has an elliptical construction equivalent to sluicing in English, we can start looking for its source.

2.1 *Are Farsi sluices derived from clefts?*

One possibility is that Farsi sluices are derived not through movement – of a yet unknown variety – but from a cleft structure. Sluicing-like constructions

have long been known to exist in Japanese, Korean, and Mandarin Chinese, all languages lacking obligatory *wh*-movement. But there is a great deal of evidence suggesting that, at least for these languages, the source of the sluicing-like construction is not an ordinary constituent question but rather a clefted question. Merchant (1998), following earlier work, makes this proposal for Japanese (similar approaches are taken in Nishiyama, Whitman & Yi 1996 for Korean, and Adams 2004 for Mandarin Chinese). He dubs the slucing-like construction found in Japanese PSEUDOSLUICING, an example of which is given in (22).

(22) Dareka-ga sono hon-o yon-da ga, watashi-wa [$_{CP}$ [$_{TP}$ *pro*
someone-NOM that book-ACC read-PAST but I-TOP
dare ~~da/de aru~~] ka] wakaranai.
who be-PRES Q know.not
'Someone read that book, but I don't know who it is.'
(Merchant 1998: 91)

What looks here like the *wh*-remnant of a sluice is actually just a *wh*-phrase in the pivot of a cleft. Since the expletive subject and copula are both null and the cleft clause (the part that looks like a relative clause) is only optionally present, the construction in (22) looks like sluicing in English.

This analysis of pseudosluicing relies crucially on the fact that the cleft clause is optional. In English, too, either (23) or (24) is a suitable answer to the question *Who lives in Paris?*

(23) It's Aurélie who lives in Paris. full cleft
(24) It's Aurélie. truncated cleft

The exact relationship between the constructions in (23)–(24) has not been decisively settled. Some accounts relate the TRUNCATED CLEFT in (24) to the FULL CLEFT in (23) derivationally, while others posit no relation whatsoever (see Mikkelsen 2007 for discussion, references, and an analysis of truncated clefts as specificational copular clauses). While the structural analysis of clefts is orthogonal to my purpose here, it is important to keep the truncated and full varieties apart conceptually. The two constructions differ in the restrictions they place on their pivots, restrictions that will be useful in figuring out whether what looks like sluicing in Farsi is a cleft.

Farsi has a productive clefting strategy. The question in (25) can be answered with either a full cleft (answer 1) or a truncated cleft (answer 2).

(25) Q: che kesi dar zad?
what someone door hit.3SG
'Who knocked?'
A1: rostam-e ke dar zad.
Rostam-is that door hit.3SG
'It's Rostam who knocked.' full cleft

A2: rostam-e.
Rostam-is
'It's Rostam.' truncated cleft

Constituent questions can be formed on the pivot of either type of cleft:

(26) ye kesi in ketāb-o xunde vali ne-midunam ki
one someone this book-OBJ read.3SG but NEG-know.1SG who
bud ke ketāb-o xund.
was that book-OBJ read.3SG
'Someone read this book, but I don't know who it was that read the book.'

(27) ye kesi in ketāb-o xunde vali ne-midunam ki bud.
one someone this book-OBJ read.3SG but NEG-know.1SG who was
'Someone read this book, but I don't know who it was.'

If we are trying to derive a sluicing-like structure from one of the clefts above, the truncated cleft in (27) seems like the more promising source. The cleft clause is already missing and Farsi, as a pro-drop language, does not have expletives (see Karimi 2005: 89–94 for discussion). The only difference, then, between (27) and a sluice is the presence of the copula. But while the copula is optional in Japanese, there is no general process of copula omission in Farsi. Leaving *-e* 'is' out in a predicational copular clause, as in (28), or a full cleft, as in (29), is ungrammatical. (For ungrammatical examples, I provide the closest GRAMMATICAL English translation possible.)

(28) māshine sohrāb qermez*(-e).
car Sohrab red-is
Intended: 'Sohrab's car is red.'

(29) rostam*(-e) ke dar zad.
Rostam-is that door hit.3SG
Intended: 'It is Rostam who knocked.'

Two conceptual arguments militate against positing a process of copula deletion here. First, as an elliptical operation, it would be quite strange, applying to a constituent that is not a phrase. Second, copula deletion would only target truncated clefts, a restriction that is nothing more than a stipulation.

A number of empirical arguments can also be brought to bear on the issue (introduced originally in Merchant 1998, 2001: 115–127).[4] First, truncated

[4] Some of the tests proposed by Merchant (2001: 115–127) for distinguishing pseudosluicing from real sluicing are not applicable to Farsi. Aggressively non-D-linked *wh*-phrases, which can occur as the pivot in a full or truncated cleft, e.g. *Who the hell was it* (*that left the door open*)*?*, but not as the remnant in a sluice, do not exist as far as I can tell. Nor does Farsi

clefts do not allow *wh*-adjuncts in pivot position, though they are fine as the remnant of a sluice. This is illustrated for English in (30).

(30) He fixed the car, but I don't know how/why/when/where (*it was).
(Merchant 2001: 121)

An identical constraint is found in Farsi, as shown for four different *wh*-adjuncts in (31)–(34).

(31) navid ye jur-i javāher-o dozdide. ne-midunam
Navid one way-IND jewels-OBJ stole.3SG NEG-know.1SG
chetor (*bud).
how was
'Navid somehow stole the jewels. I don't know how.'

(32) vis māshin-o be ye dalil-i taamir karde
Vis car-OBJ to one reason-IND repair did.3SG
vali ne-midunam cherā (*bud).
but NEG-know.1SG who was
'Vis repaired the car for some reason, but I don't know why.'

(33) rostam māshin-o ye moqe-yi taamir karde vali
Rostam car-OBJ one time-IND repair did.3SG but
ne-midunam kei (*bud).
NEG-know.1SG when was
'Rostam repaired the car sometime, but I don't know when.'

(34) royā javāher-o ye jā-i qāyem karde vali ne-midunam
Roya jewels-OBJ one place-IND hiding did.3SG but NEG-know.1SG
kojā (*bud).
where was
'Roya hid the jewels somewhere, but I don't know where.'

If sluicing in Farsi is derived from a truncated cleft, then the contrast in grammaticality when the remnant is a *wh*-adjunct is unexpected.

A parallel argument can be made from the incompatibility of truncated clefts with pivots that correspond to the implicit argument of a preceding clause. In (35), the object of *eat* in the first clause is not overtly expressed; the truncated cleft in the second clause is accordingly ungrammatical. A sluice is, of course, possible (these are Chung, Ladusaw & McCloskey's (1995) SPROUTING cases).

(35) They said they had already eaten, but I don't know what (*it was).

Farsi exhibits the same restriction, with one small caveat. For reasons that are not entirely clear to me, a simplex verb like *xordan* 'eat' must always take

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have SWIPING, the phenomenon in which a *wh*-word inverts with a preposition under sluicing.

an object, as shown in (36), even if it is a noun with little semantic content distinct from the verb, such as *qazā* 'food'.[5]

(36) (a) giti qazā xord.
Giti food ate.3SG
'Giti ate.'
(b) #giti xord.
Giti ate.3SG

Complex predicates in Farsi (also called light verb constructions; see Farudi 2005 and references contained therein) do not have this restriction. The internal argument of a complex predicate like *otu zadan* 'to iron' (lit. 'iron'+'to hit') can be implicit, as in (37).

(37) giti otu zad.
Giti iron hit.3SG
'Giti ironed.'

A complex predicate's implicit object argument cannot be questioned with a truncated cleft, as shown in (38), though a sluice formed on it is fine.

(38) giti dāre otu mizane vali ne-midunam chi(*-e).
Giti have.3SG iron hit.3SG but NEG-know.1SG what-is
'Giti is ironing, but I don't know what.'

The third piece of evidence that sluicing in Farsi is not derived from a truncated cleft comes from case restrictions on the pivot. The closest thing that Farsi has to case is the enclitic *rā*, illustrated in A1 of (39), which occurs on specific inanimate and all animate object DPs (it is, in other words, a differential object marker). Note that, while the citation form of this morpheme is *rā*, in colloquial speech it can be realized as *o* or *ro* depending on the identity of the final segment of the word to which it attaches. Phrases bearing *rā* can never be pivots, as shown by the ungrammaticality of A2.

(39) Q: mahin ki-o daavat kard?
Mahin who-OBJ invitation did.3SG
'Who did Mahin invite?'

[5] The sentence in (36a) is grammatical when the object is NULL (as opposed to implicit):

(i) Q: shokolād-o ki xord?
chocolate-OBJ who ate.3SG
'Who ate the chocolate?'
A: giti *pro* xord.
Giti ate.3SG
'Giti ate it.'

A null object is represented syntactically, plausibly as *pro*, and must already be given in the discourse, as in (i). An implicit object is part of the conceptual structure of the verb but is not represented syntactically. See Bhatt & Pancheva (2006) for further discussion.

A1: sohrāb*(-o) daavat kard.
Sohrab-OBJ invitation did.3SG
'She invited Sohrab.'
A2: sohrāb(*-o) bud.
Sohrab-OBJ was
'It was Sohrab.'

In contrast, the remnant of a sluice can optionally be *rā*-marked, as in (40).

(40) mahin ye nafar-i-ro daavat karde vali be sohrāb
Mahin one person-IND-OBJ invitation did.3SG but to Sohrab
ne-mige ki(-ro).
NEG-say.3SG who-OBJ
'Mahin invited someone, but she won't tell Sohrab who.'

The proper analysis of *rā* is a contentious issue (see, for instance, Karimi 1990, Dabir-Moghaddam 1992, Ghomeshi 1997b, Dalrymple & Nikolaeva 2005, and the references they contain for a variety of different approaches). I expect that, with further investigation, the optionality that it displays in the above example (40) will find an explanation.[6] For present purposes, it is enough that the distribution of *rā* is different in truncated clefts and sluicing.

Finally, the pivot position of a truncated cleft is restricted to DPs. As shown in (41), putting a PP in this position results in ungrammaticality.

(41) Q: giti bā ki dāsht sohbat mikard?
Giti with who had.3SG speaking did.3SG
'Who was Giti speaking with?'
A: *bā sirus bud.
with Cyrus was
Intended: 'It was with Cyrus that she was speaking.'

In contrast, PPs routinely serve as remnants in sluicing, as shown in (42).

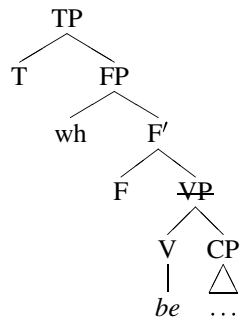
(42) giti bā kesi dāsht sohbat mikard vali na-goft
Giti with someone had.3SG speaking did.3SG but NEG-said.3SG
bā ki.
with who
'Giti was talking with someone, but she didn't say who.'

These four pieces of evidence make deriving sluicing in Farsi from a truncated cleft a difficult, if not impossible, proposition. There is, however,

[6] There is some speaker variability regarding the acceptability of *rā* on remnants. For some speakers, the presence of the object marker is optional, as in (40), but for others it is obligatory. This does not impinge on the point I am making here since, in either case, sluicing patterns differently from both truncated and full clefts. I thank an anonymous reviewer for pointing this out.

another clefting analysis that avoids many of the shortcomings of the previous one. Sluices might be derived from full clefts to which verb phrase ellipsis has applied. This analysis is represented schematically in (43).[7]

(43)



This structure for full clefts comes largely from É. Kiss (1998: 256–261). But while she analyzes the copula as the overt realization of F(ocus), I have made the more conservative assumption that it is a V. A surface structure that looks like a sluice is derived by eliding the VP. This deletes the copula and the cleft clause, leaving only the *wh*-pivot.

Two facts suggest that this analysis, too, is incorrect. First, I argue elsewhere (Toosarvandani, to appear) that, while Farsi has a species of verb phrase ellipsis, it does not apply to all types of verbs, but only to the language's complex predicates. This type of ellipsis deletes the phrasal complement of the light verb. In (44), the phrase headed by *otu* 'iron', the nonverbal half of the complex predicate, which contains the internal argument *piran-o* 'shirt', is elided, leaving behind the light verb *zad* 'hit'.

(44) sohrāb piran-o otu na-zad vali rostam [$_{vP}$ [$_{NP}$ ~~piran-o~~ ~~otu~~] zad].
Sohrab shirt-OBJ iron NEG-hit.3SG but Rostam shirt-OBJ iron hit.3SG
'Sohrab didn't iron the shirt, but Rostam did.'

The type of ellipsis involved in the analysis in (43) deletes a VP headed by a simplex verb, namely the copula, a type which is otherwise unattested in the language.

Second, recall that truncated clefts do not allow the pivot to bear the object marker *rā*. Full clefts behave similarly, as illustrated in (45). Sluicing does, however, allow the remnant to be *rā*-marked, as we saw in (40).

[7] Kyle Johnson suggested this possibility to me.

(45) *mahin ye nafar-i-ro daavat karde vali be sohrāb
Mahin one person-IND-OBJ invitation did.3SG but to Sohrab
ne-mige ki-ro bud ke daavat karde.
NEG-say.3SG who-OBJ was that invitation did.3SG
Intended: 'Mahin invited someone, but she won't tell Sohrab who it was that she invited.'

This contrast is essential to ruling out the verb phrase ellipsis analysis of Farsi sluicing, since none of the other diagnostics for truncated clefts applies to full clefts. Adjuncts can appear in the pivot of a full cleft (46), questions formed on the pivot can ask about the implicit argument of a preceding clause (47), and PPs are permitted in pivot position (48).

(46) rostam māshin-o taamir karde vali ne-midunam kei
Rostam car-OBJ repair did.3SG but NEG-know.1SG when
bud ke māshin-o taamir kard.
was that car-OBJ repair did.3SG
'Rostam repaired the car, but I don't know when it was that he repaired the car.'

(47) giti dāre otu mizane vali ne-midunam chi-e ke
Giti have.3SG iron hit.3SG but NEG-know.1SG what-is that
dāre otu mizane.
have.3SG iron hit.3SG
'Giti is ironing, but I don't know what it is that she is ironing.'

(48) giti bā kesi dāsht sohbat mikard vali na-goft
Giti with someone had.3SG speaking did.3SG but NEG-said.3SG
bā ki bud ke dāsht sohbat mikard.
with who was that had.3SG speaking did.3SG
'Giti was talking with someone, but she didn't say with whom it was that she was talking.'

2.2 *Are Farsi sluices derived by movement?*

It seems, then, that Farsi sluicing cannot be assimilated to a cleft structure. There are numerous restrictions on the pivot of a cleft that simply do not hold of the remnant in a sluice. In this respect, Farsi sluicing patterns with its English analogue. There are a number of other parallels suggesting that sluicing should be analyzed in essentially the same way in both languages – as involving movement of the interrogative phrase to a left peripheral position followed by deletion of the rest of the clause.

A weak argument for syntactic movement of the remnant in sluicing, due to Merchant (2001: 48–50), comes from its position with respect to the verb. While Farsi generally has SOV word order, CP arguments of the verb occur to the right (49). DP arguments – including, as in (50), CPs embedded under *in* 'this' – occur in the canonical preverbal position.

(49) (a) midunam [$_{CP}$ ke sohrāb bastani-sh-o na-xorde].
know.1SG that Sohrab ice.cream-his-OBJ NEG-ate.3SG
'I know that Sohrab didn't eat his ice cream.'
(b) *[$_{CP}$ ke sohrāb bastani-sh-o na-xorde] midunam.
that Sohrab ice.cream-his-OBJ NEG-ate.3SG know.1SG

(50) [$_{DP}$ in-ro [$_{CP}$ ke sohrāb bastani-sh-o na-xorde]] midunam.
this-OBJ that Sohrab ice.cream-his-OBJ NEG-ate.3SG know.1SG
'I know that Sohrab didn't eat his ice cream.'

The remnant in a sluice, too, can only occur to the right of the verb, as shown in (51).

(51) (a) sohrāb ye chiz-i xorde vali ne-midunam chi.
Sohrab one thing-IND ate.3SG but NEG-know.1SG what
'Sohrab ate something, but I don't know what.'
(b) *sohrāb ye chiz-i xorde vali chi ne-midunam.
Sohrab one thing-IND ate.3SG but what NEG-know.1SG

The parallel distribution of remnants and CP arguments of the verb follows directly from a movement-plus-deletion account. Since the CP from which the sluice in (51a) would be derived is positioned to the right of the verb, the remnant, too, would end up to the right. An alternative analysis, like that of van Riemsdijk (1978: 231–254), under which sluicing does not contain any deleted structure and the remnant *chi* 'what' is just a DP, predicts incorrectly that the remnant should occur where all other DP arguments occur, to the left of the verb.[8]

The strongest evidence for movement comes from situations where the remnant in a sluice behaves just like its nonelliptical counterpart. Merchant (2001: 89–107) discusses this class of facts under the rubric of FORM–IDENTITY GENERALIZATIONS. If, for instance, the interrogative phrase of a question bears a certain case, say accusative, then the remnant in the corresponding sluice should also bear accusative case. Even in English, a language lacking most inflectional morphology, this generalization holds. In the subject question of (52), accusative *whom* is not allowed regardless of whether or not the rest of the clause is pronounced.

(52) Somebody from Kankakee is going to be invited to the party by Ralph, but they don't know who/*whom (is going to be invited to the party by Ralph). (Ross 1969: 254)

[8] This is only a weak argument, since a more sophisticated base generation analysis could assign the remnant a complex structure like the following: [$_{CP}$ wh [$_{TP}$ *pro*]] (see Lobeck 1995, Chung et al. 1995, Culicover & Jackendoff 2005: 266–272). Here, the interrogative phrase is base generated inside a CP that also contains an anaphoric element standing in for TP. In this case, the CP, and the *wh*-remnant inside of it, will occur in the correct place to the right of the verb.

Farsi is also impoverished in its case morphology. The only candidate for case marking is the object marker *rā*, introduced in section 2.1, which appears on all animate and specific DPs in object position. It is thus obligatory on *ki* 'who' in (53). But in the corresponding sluice in (54), repeated from (40) above, the presence of *rā* on the remnant is merely optional.

(53) ki*(-o) mahin ⟨ki-o⟩ daavat karde?
who-OBJ Mahin invitation did.3SG
'Who did Mahin invite?'

(54) mahin ye nafar-i-ro daavat karde vali be sohrāb
Mahin one person-IND-OBJ invitation did.3SG but to Sohrab
ne-mige ki(-o).
NEG-say.3SG who-OBJ
'Mahin invited someone, but she won't tell Sohrab who.'

While this optionality is clearly unexpected under the movement-plus-deletion analysis of sluicing, it does not constitute an argument against it.[9] Granted, the movement-plus-deletion account will have to be augmented to account for the distribution of *rā* under sluicing – specifically, why *rā* can be absent on a *wh*-remnant that, in a nonelliptical clause, would require it – but, as far as I can see, such an effort must be made no matter what analysis one pursues. If instead the animate DP remnant in the sluice in (54) is base generated as the complement of the verb, then the normal case licensing mechanism will have to be prevented from always assigning *rā*.

The second form-identity generalization, involving preposition stranding, is more successful as a diagnostic for movement. If the remnant in sluicing arrives at its position by movement then it should obey the usual constraints on movement. If prepositions must normally be piedpiped, then when the correlate in a sluice is a PP, the remnant should be a PP as well. For languages that allow preposition stranding, we expect the reverse: it should be possible for a DP remnant to have a PP correlate. For the most part, this seems to be right (though see Almeida & Yoshida 2007 for a counterexample). In English, a preposition can be stranded in a regular question (55), as well as in a sluice (56).

(55) Who was Peter talking with ⟨who⟩?

(56) Peter was talking with someone, but I don't know (with) who. (Merchant 2001: 92)

Farsi is not a preposition-stranding language. If a *wh*-phrase is scrambled for information structure reasons to clause-initial position, the preposition

[9] For some speakers, the presence of *rā* on the remnant is obligatory; see fn. 6. This is exactly what the movement-plus-deletion account would predict.

must be piedpiped along with it (57a); stranding the preposition is severely ungrammatical (57b). The sluice in (58) is also grammatical only when the preposition of the remnant is piedpiped.[10]

(57) (a) bā ki ali ⟨bā ki⟩ harf mizad?
with who Ali speech hit.3SG
'Who was Ali talking with?'
(b) *ki ali bā ⟨ki⟩ harf mizad?
who Ali with speech hit.3SG

(58) ali bā kesi harf mizad, ammā ne-midunam *(bā) ki.
Ali with someone speech hit.3SG but NEG-know.1SG with who
'Ali was speaking with someone, but I don't know who.'
(Merchant 2001: 96)

There is one restriction on movement that has not been presented here: island constraints. This is because sluicing in English is famously able to void all sorts of island violations. In the Appendix, I show that sluicing in Farsi also does not obey island constraints. For reasons of space, I am not able to contribute here to the resolution of why, if sluicing is derived by movement, it is able to ignore island constraints (see Merchant 2001, 2008 for extensive discussion).

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[10] Interestingly, some preposition-like elements are able to be stranded in a sluice. A phrase headed by *tavasot* must be piedpiped when the *wh*-phrase it contains is scrambled (i). In a sluice, however, like the one in (ii), *tavasot* is only optionally realized in the remnant.

(i) *ki in ketāb tavasot-e ⟨ki⟩ neveshte shode?
who this book through-EZ written became.3SG
Intended: 'Who was this book written by?'

(ii) in ketāb tu qarne nunzda tavasot-e kesi neveshte shode vali
this book in century nineteen through-EZ someone written became.3SG but
maalum nist (tavasot-e) ki.
clear NEG.is through-EZ who
'This book was written in the nineteenth century by someone, but it is unclear by whom.'

There is reason to think, however, that formally *tavasot* is not a preposition, even though it functions as one. It must, for instance, be followed by EZĀFE, a suffix (*-e*) that links together: 1) the nouns in a compound, and 2) an adjective and the noun it modifies (Samiian 1983, 1994; Ghomeshi 1997a). See Pantcheva 2006 for further discussion of the differences between *tavasot* and the prepositions that cannot be stranded, as in (57)–(58).

Even more intriguing is the fact that stranding with *tavasot* is only possible when the correlate is overt. When the correlate is nonovert, stranding is not possible, as shown in (iii).

(iii) in ketāb tu qarne nunzda neveshte shode vali maalum nist
this book in century nineteen written became.3SG but clear NEG.is
*(tavasot-e) ki.
through-EZ who
'This book was written in the nineteenth century, but it is unclear by whom.'

This recalls the constraint on preposition stranding that Chung (2006) identifies for English, a number of other Germanic languages, and Chamorro.

If the remnant in Farsi sluicing gets to its position outside of the deleted phrase by movement, what kind of movement is it? In the next section, I argue that the syntactic operation responsible for fronting *wh*-phrases in sluicing contexts is associated with focus. This analytical connection will lead to an examination of the interpretative effects of this type of movement.

3. Focus and the movement of *wh*-phrases

3.1 *Farsi as a* wh-*in situ language*

Farsi is usually said to be *wh*-in situ, and if one looks only at simple monotransitive sentences, this appears to be true. A declarative sentence with SOV word order like (59) can be questioned as in (60)–(61). Subject interrogative phrases occur in their normal sentence-initial position (60). Object interrogative phrases occur to the left of the verb but to the right of the subject (61).

(59) sohrāb moz-o xord.
Sohrab banana-OBJ eat.3SG
'Sohrab ate the banana.'

(60) **ki** moz-o xord?
who banana-OBJ eat.3SG
'Who ate the banana?' subject question

(61) sohrāb **chi-o** xord?
Sohrab what-OBJ eat.3SG
'What did Sohrab eat?' object question

Indirect objects have a more complicated distribution. Noninterrogative indirect object PPs can occur either to the left or the right of the verb (62).[11] But, as shown in (63), the corresponding interrogative phrases only occur to the left of the verb.

(62) (a) hasan ketāb-o dād **(be) ali**.
Hasan book-OBJ gave.3SG to Ali
'Hasan gave the book to Ali.'

(b) hasan ketāb-o **be ali** dād.
Hasan book-OBJ to Ali gave.3SG
'Hasan gave the book to Ali.' (Kahnemuyipour 2001: 47)

(63) (a) hasan ketāb-o **be ki** dād?
Hasan book-OBJ to who gave.3SG
'Who did Hasan give the book to?'

[11] I know of no explanation for why, in (62a), the preposition can be omitted when the PP occurs after the verb. The pattern resembles the dative alternation in English.

(b) *hasan ketāb-o dād **be ki**?
Hasan book-OBJ gave.3SG to who

Locative PPs exhibit a similar pattern. They can either precede or follow the verb (64), while their interrogative counterpart *kojā* 'where' is only found preverbally (65).

(64) (a) ali ketāb-o gozāsht **ru miz**.
Ali book-OBJ put.3SG on table
'Ali put the book on the table.'
(b) ali ketāb-o **ru miz** gozāsht.
Ali book-OBJ on table put.3SG
'Ali put the book on the table.' (Kahnemuyipour 2001: 48)

(65) (a) ali ketāb-o **kojā** gozāsht?
Ali book-OBJ where put.3SG
'Where did Ali put the book?'
(b) *ali ketāb-o gozāsht **kojā**?
Ali book-OBJ put.3SG where

To account for these facts, Kahnemuyipour (2001) proposes that all interrogative phrases raise and adjoin to vP. While this movement is sometimes string vacuous, it ensures that all *wh*-phrases end up to the left of the verb. Under this account, Farsi is, strictly speaking, not *wh*-in situ, since interrogative phrases do not surface in the same position where they are merged; they undergo short-distance movement to Spec-vP.[12]

This movement, however, is not enough to derive sluicing. In all the examples just given, the interrogative phrase, while not in its base position, is still lower in the structure than the subject. Assuming that subjects raise to

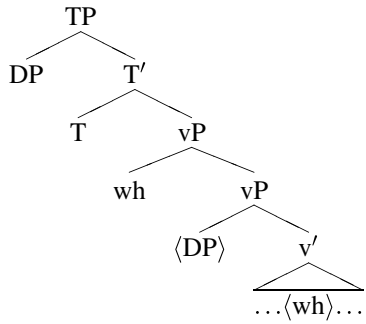
[12] The situation with *cherā* 'why' is a bit more complicated. As shown in (i), the position of a purpose clause varies according to the word or phrase that introduces it. The 'why' word occurs in clause-initial position (ii).

(i) (a) vis barāye rāmin gol xarid [**chon** dus-esh dāre].
Vis for Ramin flower bought.3SG since friend-him have.3SG
'Vis bought Ramin flowers since she likes him.'
(b) vis [**be xātere** in ke rāmin-o dust dāre] barā-sh gol
Vis to sake this that Ramin-OBJ friend have.3SG for-him flower
xarid.
bought.3SG
'Vis bought Ramin flowers for the reason that she likes him.'

(ii) **cherā** vis barāye rāmin gol xarid?
why Vis for Ramin flower bought.3SG
'Why did Vis buy flowers for Ramin?'

Spec-TP,[13] the structure of a nonsubject constituent question under Kahnemuyipour's analysis can be given schematically as (66).

(66)



The structure in (66) cannot serve as the input to sluicing since there is no constituent that contains everything in the clause except the *wh*-phrase. Specifically, since the subject is in a structurally superior position, if sluicing targets the sister of the *wh*-phrase, then we predict – falsely – that the subject will always be stranded. For our purposes, then, Farsi is effectively a *wh*-in situ language.[14]

This is not to say that interrogative phrases are fixed in place. They undergo the same information-structure-driven movement processes that non-interrogative phrases do. It is one such process – focus fronting – that I will argue is responsible for moving the remnant to a position where it can be stranded in sluicing.

3.2 *The syntax of focus fronting*

Major sentence constituents in Farsi are subject to scrambling for information structure reasons. In one type of scrambling, which I call FOCUS FRONTING, a phrase fronts to a clause-initial position where it receives a pitch accent (indicated with capitalization), as shown in (67).

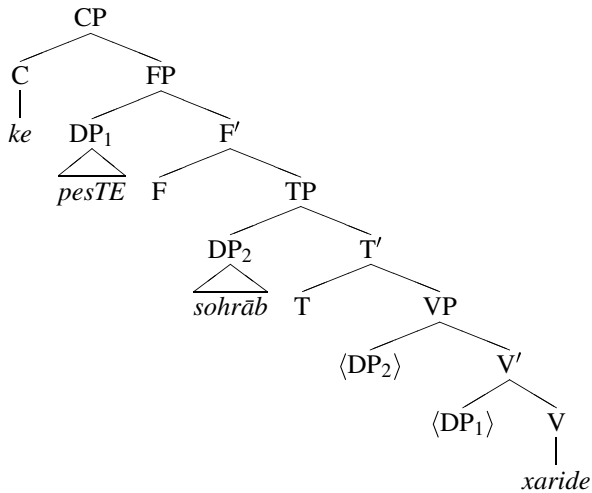
(67) giti midune ke pesTE sohrāb ⟨peste⟩ xaride.
Giti know.3SG that pistachio Sohrab bought.3SG
'Giti knows that Sohrab bought pistachios.'

[13] In order to derive SOV surface word order, the subject must raise above the interrogative phrase adjoined to vP. Karimi (2005: 71–104) argues explicitly against this analysis, proposing instead that Spec-TP is reserved for topics.

[14] Thus, while Kahnemuyipour's proposal may be correct, I will ignore the movement of interrogative phrases to Spec-vP in subsequent trees.

Following Karimi (2005: 131–158). I assume that the object DP in this example, *peste* 'pistachios', raises to the specifier of a dedicated focus projection, Spec-FP. This focus projection is located above T but below C:

(68) *giti midune …*



Focus-fronted elements thus end up sandwiched between the subject and the complementizer *ke*.

Evidence that *ke* is, in fact, a complementizer comes from two facts. First, *ke* always occurs to the left of all other elements in the clause. This is what we expect if, as the overt realization of C, it heads the clause.[15] Second,

[15] Ghomeshi (2001) argues that *ke* is not a complementizer but a clitic that attaches to verbs taking clausal complements (she does not try to account for *ke* in relative clauses). This would explain why nothing in an embedded clause can ever occur before the particle, and in addition prevent us from using it as a reference point for determining the position of focus fronted elements in the clause.

The strongest evidence that *ke* is not a clitic comes from extraposition. As shown in (i), a relative clause can either immediately follow its head noun or it can be extraposed to the end of the clause. In the latter case, the complementizer is always extraposed along with the rest of the clause, indicating that the two form a constituent together. If *ke* were cliticized to the preceding head, we would expect the ungrammatical string in (ii) instead.

(i) (a) man ketāb-i-ro [ke sohrāb nevesht] xundam.
I book-REL-OBJ that Sohrab wrote.3SG read.1SG
'I read the book that Sohrab wrote.'
(b) man ketāb-i-ro xundam [ke sohrāb nevesht].
I book-REL-OBJ read.1SG that Sohrab wrote.3SG
(ii) *man ketāb-i-ro ke xundam [sohrāb nevesht].
I book-REL-OBJ that read.1SG Sohrab wrote.3SG
Intended: 'I read the book that Sohrab wrote.'

Further arguments against the clitic analysis can be found in Taleghani (2006: 115–119) and Darzi (2008: 111–115).

in accordance with they way Rosenbaum (1965: 41) originally defined the category of complementizer, *ke* is found only in subordinate clauses – e.g. sentential complements (67) or relative clauses (69) – but not in matrix clauses (70).[16]

(69) rostam az māshin-i [ke sohrāb xarid] xosh-esh
Rostam from car-REL that Sohrab bought.3SG happy-his
miyād.
comes.3SG
'Rostam likes the car that Sohrab bought.'

(70) *ke sohrāb māshin-esh-o furuxt.
that Sohrab car-his-OBJ sold.3SG
Intended: 'Sohrab sold his car.'

3.3 *The semantics of focus fronting*

With a syntax for focus fronting in hand, we can now turn to its semantics. A proper exposition of how all focus-fronted elements are interpreted would require more space than is available, so I confine my discussion here to how interrogative phrases are interpreted in Spec-FP, since it is interrogative phrases that are relevant to sluicing.[17]

Consider the questions in (71)–(73). The interrogative phrases in these examples have raised to a position above the subject where they receive a pitch accent, a position that I have identified as Spec-FP. Intuitively, these fronted interrogative phrases are interpreted as standing in a contrastive relationship with another phrase in the preceding clause.

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[16] Complementizers have been argued also to convey illocutionary force (originally by Bresnan 1972 and more recently by Rizzi 1997, *inter alia*). But, as shown in (ii), *ke* is able to cooccur with the question particle *āyā*, which, in formal registers of Farsi, appears at the beginning of a polar question like (i).

(i) (āyā) sohrāb raft?
Q Sohrab went.3SG
'Did Sohrab go?'

(ii) porsidam (ke) (āyā) sohrāb miyād.
asked.1SG that Q Sohrab comes.3SG
'I asked whether Sohrab is coming.'

Since *ke* occurs both in declarative clauses (67) and interrogative clauses (ii), it would be a mistake to associate it with any sort of illocutionary force. Rather, it seems to be a simple marker of subordination.

[17] I refer the reader to Karimi (1999: 63f., 2003, 2005: 132) for further discussion of the syntax of focus fronting and its semantic effects on noninterrogative phrases. Karimi & Taleghani (2007) also address the semantics of focus fronting interrogative phrases, but they use 'contrastive focus' in a different sense than I do here.

(71) midunam ke sohrāb **ye** **ketāb** xarid vali
know.1SG that Sohrab one book bought.3SG but
ne-midunam **CHE** **ketāb-i-ro** sohrāb ⟨che ketāb-i-ro⟩
NEG-know.1SG what book-IND-OBJ Sohrab
xarid.
bought.3SG
'I know that Sohrab bought a book, but I don't know what book he bought.'

(72) A: ne-midunam sohrāb **che** **romān-i-ro** dust dāre.
NEG-know.1SG Sohrab what novel-IND-OBJ friend have.3SG
'I don't know what novel Sohrab likes.'
B: na, man az shomā porside budam **che** **FILM-i-ro**
no I from you asked was.1SG what movie-IND-OBJ
sohrāb ⟨che film-i-ro⟩ dust dāre.
Sohrab friend have.3SG
'No, I had asked you what movie he likes.'

(73) midunam sohrāb vis-o **kojā** mixād shām bebare
know.1SG Sohrab Vis-OBJ where want.3SG dinner take.3SG
vali yād-am nist **KEI** mixād vis-o
but memory-my is.NEG when want.3SG Vis-OBJ
⟨kei⟩ beresune xune.
make.arrive.3SG home
'I know where Sohrab wants to take Vis to dinner, but I don't remember when Sohrab wants to bring Vis home.'

In (71), the determiner of *che ketābi-ro* 'what book' contrasts with the determiner of *ye ketāb* 'a book'. In (72), the restriction of *che filmi-ro* 'what book' contrasts with the restriction of *che romāni-ro* 'what novel'. In (73), the entire interrogative phrase *kei* 'when' contrasts with *kojā* 'where'.

If the focus-fronted interrogative phrase, or some part of it, must be contrastive, then we expect that focus fronting will be infelicitous in out-of-the-blue linguistic contexts where there is nothing for the interrogative phrase to contrast with. This seems to be correct. When the focus-fronted question in (74a) is uttered without any preceding discourse, it is infelicitous. The same question with neutral word order is fine (74b).

(74) (a) #CHI sohrāb ⟨chi⟩ āvord?
what Sohrab brought.3SG
'What did Sohrab bring?'
(b) sohrāb chi āvord?
Sohrab what brought.3SG

The obligatory contrastive focus on fronted interrogative phrases can be modeled formally using Rooth's (1985, 1992) ALTERNATIVE SEMANTICS. As a warning to the reader, the machinery of Rooth's theory may seem a bit

excessive at this point for the task at hand, but the technical implementation of focus fronting developed below is an essential prerequisite to the discussion in section 4.2.

In Rooth's semantics for focus, all natural language expressions have two semantic values: an ordinary semantic value provided by the interpretation function $[\![.]\!]^{\circ}$ and a focus semantic value given by the focus interpretation function $[\![.]\!]^{f}$. When an expression does not contain a focus, its focus semantic value is simply the set containing its ordinary semantic value. Thus, the focus semantic value of *Mary likes Sue* is $[\![\text{Mary likes Sue}]\!]^{f} = \{\textbf{like}(\textbf{sue})(\textbf{mary})\}$, or the set containing the proposition that Mary likes Sue. When a focus is present, the focus semantic value is derived by making a substitution in the place marked by focus. For *MARY likes Sue*, the focus semantic value is $[\![\text{MARY likes Sue}]\!]^{f} = \{p | \exists x[p = \textbf{like}(\textbf{sue})(x) \wedge x \in D_e]\}$, or the set of propositions of the form x likes Sue, where x is in the domain of entities.

The focus semantic value of an expression is always present alongside the ordinary semantic value. By itself, though, it does not enter into the truth conditions of the sentence. Focus semantic values are used by a focus interpretation operator, $\sim$, which for Rooth is the only semantic object able to make reference to focus values. The $\sim$ operator is adjoined freely at LF, taking a focus in its scope (we can also call the scope of a $\sim$ operator its DOMAIN). The operator makes reference to focus semantic values through a presupposition relating its two arguments: the phrase ϕ to which it is adjoined and a free variable, either a set Γ or an individual γ. The presupposition that the focus interpretation operator introduces is given in (75).

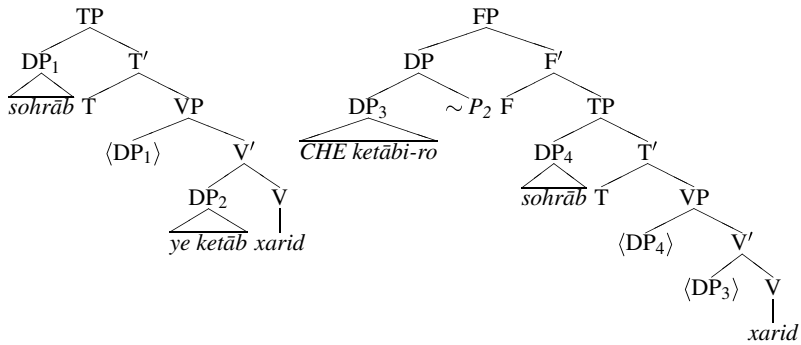
(75) a. *Set case*. $\phi \sim \Gamma$ presupposes that Γ is a subset of the focus semantic value for ϕ and contains both the ordinary semantic value of ϕ and an element distinct from the ordinary semantic value of ϕ.
b. *Individual case*. $\phi \sim \gamma$ presupposes that γ is an element of the focus semantic value for ϕ distinct from the ordinary semantic value of ϕ.
(Rooth 1992: 93)

Setting aside momentarily the question of precisely how the free variable gets its value, from the presupposition in (75) we already know something about what this value must be. The free variable's value will be either: (1) a subset of the focus semantic value of ϕ that contains not only ϕ but something else as well; or (2) a member of the focus semantic value of ϕ that is distinct from ϕ itself. The presupposition is stated disjunctively in order to unify the interpretation of different kinds of focus structures, including contrastive focus, the focus that shows up in question-answer pairs, and the focus that is associated with adverbs like *only*. While Rooth (1992: 90f.) suggests a way of getting rid of this disjunction, I will leave the definition as is for reasons of concreteness. Only the (b) disjunct (the individual case) comes into play in the course of this paper.

Focus fronting is defined by the adjunction of a focus interpretation operator $\sim$ to the element in Spec-FP. To show how the focus structure of a fronted *wh*-phrase is derived, I give a partial LF structure for (76), repeated from (71) above, in (77).

(76) midunam ke sohrāb **ye** **ketāb** xarid vali ne-midunam
know.1SG that Sohrab one book bought.3SG but NEG-know.1SG
CHE **ketāb-i-ro** sohrāb ⟨che ketāb-i-ro⟩ xarid.
what book-IND-OBJ Sohrab bought.3SG
'I know that Sohrab bought a book, but I don't know what book he bought.'

(77) *midunam ke …* *vali nemidunam …*



A focus interpretation operator is adjoined to DP_3 in Spec-FP, the interrogative phrase *CHE ketābi-ro* 'what book', which contrasts with DP_2, the indefinite *ye ketāb* 'a book'. By the presupposition in (75b), DP_2 must therefore be a member of the focus semantic value of DP_3. Since it is the interrogative determiner of DP_3 that bears a pitch accent, the focus semantic value of the entire phrase is obtained by a making a substitution in the position of the determiner. Thus, $[\![\text{CHE ketābi-ro}]\!]^f = \{P \mid \exists \mathcal{Q}[P = \mathcal{Q}(\textbf{book})]\}$, or the set of expressions of the same type as an interrogative phrase whose restriction is **book**. P is a variable of the type of interrogative phrases, and $\mathcal{Q}$ is a variable of the type of interrogative determiners.

I have left the types for these variables unspecified since giving appropriate denotations for the indefinite and interrogative determiners is a significant challenge. In Rooth's theory of focus, in order for the focused interrogative determiner in (76) to contrast with the indefinite determiner in the antecedent clause, the two must be of the same type. Romero (1998: 29–36) gives denotations for *which* and *how many* in the domain of determiners, $\langle\langle e, st\rangle, \langle\langle e, st\rangle, \langle st\rangle\rangle\rangle$, such that their alternatives include one another as well as an existential option. This is sufficient to account for the example in (76), but Romero's account must be expanded in order to account for the contrastive relationships that the other *wh*-phrases enter into (e.g. *who*, *when*, *where*).

Kratzer and Shimoyama (2002) and Kratzer (2005) provide another option within a Hamblin semantics, in which indefinites and interrogative phrases both denote sets of individuals. Other semantic objects denote sets of traditional denotations. Function application occurs pointwise: a functor taking an indefinite or interrogative phrase as its argument applies to each of the individuals in the set denoted by these expressions. At the sentence level, this schema produces a set of propositions to which operators of the desired force – question, existential, etc. – can apply.

Whatever semantics for interrogative phrases and indefinites one chooses, the data presented here require that they be alternatives to one another. In the context of (76), this means that $[\![\text{ye ketāb}]\!]^{\circ} = \mathbf{a}(\mathbf{book})$ must be in $[\![\text{CHE ketābi-ro}]\!]^{f}$.

3.4 *Summary*

In this section, I have argued for the existence in Farsi of a process of focus fronting. When an interrogative phrase raises to Spec-FP, it must stand in a contrastive relationship with another phrase of the same type. This understanding of the syntax and semantics of focus fronting will be of use in the next section, where I argue that focus fronting is responsible for moving the remnant out of the deleted constituent in Farsi sluicing.

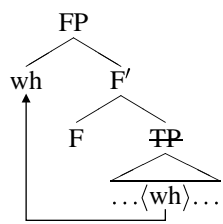
4. Deriving sluicing

4.1 *The proposal*

All the pieces we need to derive sluicing in Farsi are now in place. I propose that it proceeds as follows: first, an interrogative phrase undergoes focus fronting to Spec-FP; then, the sister of F, TP, which contains the rest of the clause including the subject, is deleted (at PF). As illustrated in (78), this produces the correct surface string. The proposal is shown schematically in (79).

(78) rāmin ye chiz-i xaride. hads bezan [$_{FP}$ chi
Ramin one thing-IND bought.3SG guess hit.2SG what
~~[$_{TP}$ rāmin ⟨chi⟩ xaride]~~].
Ramin bought.3SG
'Ramin bought something. Guess what.'

(79)



The primary syntactic evidence that the remnant in Farsi sluicing is in Spec-FP comes from its position with respect to the complementizer. Recall from section 3.2 that the focus projection is located above TP but below CP. If sluicing involves deletion of TP, then we expect that the complementizer *ke* should be able to appear in a sluice. This expectation is borne out, as shown in (80)–(81).[18]

(80) mahin mixād ye chiz-i bexare vali yād-esh
Mahin want.3SG one thing-IND buy.3SG but memory-her
ne-miyād **ke** chi.
NEG-come.3SG that what
'Mahin wants to buy something, but she doesn't remember what.'

(81) bābā-m injā nist. xod-et miduni **ke** cherā.
dad-my here NEG.is self-your know.2SG that why
'My dad isn't here. You yourself know why.'
(*Zire Tiq* (Iranian television serial), 22 January 2007)

In both examples, *ke* occurs in its normal position to the left of the remnant.

The presence of the complementizer in sluicing is perhaps a bit surprising. Merchant (2001: 61–82) shows that a wide variety of languages do not allow elements in C – e.g. complementizers, verbs, clitics, agreement

[18] An anonymous reviewer points out some sluices with remnants that are D-linked (i), PPs (ii), or adjuncts (iii) where the presence of the complementizer is awkward or ungrammatical.

(i) rāmin emruz yeki az she'rhāye hāfez-ro mixune vali man ne-midunam
Ramin today one from poem.PL Hafez-OBJ read.3SG but I NEG-know.1SG
(?ke) kodum-ro.
that which-OBJ
'Ramin will read one of Hafez's poems today, but I don't know which one.'

(ii) rāmin emruz bā yeki sohbat mikard, vali man ne-midunam (??ke)
Ramin today with one talk did.3SG but I NEG-know.1SG that
bā ki.
with who
'Ramin talked with someone today, but I don't know with whom.'

(iii) rāmin māshin-ro dorost kard, vali man ne-midunam (*ke) chetori.
Ramin car-OBJ fixed did but I NEG-know that how
'Ramin fixed the car, but I don't know how.'

The purpose of the complementizer data presented in the main text is to probe for the position of the remnant. Thus, the fact that *ke* cannot occur in (i)–(iii) just does not tell us anything about the position of the remnant.

The question of why the complementizer should be prohibited or disfavored in these examples is interesting, but one that ultimately does not fall within the scope of this paper for the following reasons. First, not all sluices with these types of remnants disallow the overt realization of the complementizer; (81) is a naturally occurring example of a *wh*-adjunct, *cherā* 'why', preceded by *ke*. Second, *that*-omission in English is not completely optional. It is conditioned by a variety of extragrammatical factors (see Jaeger 2006: 7–21), and there is no reason to think that the omission of *ke* in Farsi is any different. The gradient nature of the judgments reported for (i)–(iii) supports this hypothesis.

morphology – to occur in a sluice. In some dialects of Dutch, for example, complementizers, which can otherwise cooccur with an interrogative phrase in Spec-CP (82), are excluded in a sluice (83).

(82) Ik weet niet, wie (of) (dat) hij gezien heeft.
I know not who if that he seen has
'I don't know who he has seen.'

(83) Hij heef iemand gezien, maar ik weet niet wie (*of) (*dat).
he has someone seen but I know not who if that
'He saw someone, but I don't know who.'

(Merchant 2001: 74f.)

Merchant captures this observation in the SLUICING-COMP GENERALIZATION, which he states as follows: 'In sluicing, no non-operator material may appear in COMP' (62).

Farsi constitutes a *prima facie* counterexample to this generalization, though it is not alone in this respect. Merchant offers his own counterexample from Hungarian, which, as illustrated in (84), allows the complementizer *hogy* to appear optionally in a sluice.

(84) A gyerekek találkoztak valakivel de nem emlékszem,
the children met someone.with but not I.remember
(hogy) kivel.
that who.with
'The kids met someone, but I don't remember who.'

(Merchant 2001: 82)

The unexpected behavior of complementizers in Hungarian and Farsi may derive from a shared property of the two languages. While Hungarian is not a *wh*-in situ language like Farsi, *wh*-movement is not to Spec-CP as in English. Rather, interrogative phrases obligatorily raise to a focus projection located below the complementizer (Horvath 1986: 44–51, É. Kiss 1987: 56–61).

The conclusion that emerges is that the sluicing-COMP generalization holds only when the remnant of the sluice is in Spec-CP. For languages that do not involve the C domain in sluicing, the generalization simply does not hold. The analogous constraint for Hungarian and Farsi would ban the overt reflex of F from occurring in a sluice. Unfortunately, since there is no overt realization of F in Farsi, we cannot test this hypothesis.[19]

[19] In Hungarian, van Craenenbroeck & Lipták (2008) argue that F is sometimes realized as the particle *e* – which is able to occur in a sluice. If this is true, the sluicing-COMP generalization would not extend to sluicing licensed by a focus projection.

4.2 *The focus structure of sluicing*

If the remnant in Farsi is situated in Spec-FP, we expect it to exhibit the same phonological and semantic properties as a focus-fronted interrogative phrase in nonelliptical contexts. This seems generally to be correct. Just like the nonelliptical examples of focus fronting in (71)–(73), the remnants in (85)–(87) all bear a pitch accent.[20]

(85) man midunam ke sohrāb **ye ketāb** xaride va rāmin
I know.1SG that Sohrab one book bought.3SG and Ramin
midune **CHE ketāb-i**.
know.3SG what book-IND
'I know that Sohrab bought a book, and Ramin knows what book.'

(86) sohrāb be man goft **che ketāb-i-ro** dust dāre
Sohrab to me said.3SG what book-IND-OBJ friend have.3SG
vali na-goft **che FILM-i-ro**.
but NEG-said.3SG what movie-IND-OBJ
'Sohrab told me what book he likes, but he didn't say what movie.'

(87) faqat midunam **kojā** sohrāb dustdoxtar-esh-o did;
only know.1SG where Sohrab girlfriend-his-OBJ saw.3SG
ne-midunam **KEI**.
NEG-know.1SG when
'I only know where Sohrab saw his girlfriend; I don't know when.'

In (85), the interrogative determiner of the remnant is in a contrastive relationship with the determiner of its correlate. In (86), the restriction of the remnant contrasts with the restriction of its correlate. In (87), the entire remnant contrasts with its correlate.[21] Leaving off the pitch accent on the

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[20] This focus pattern is not restricted to Farsi. Romero (1998: 24–27) identifies a parallel pattern for English sluicing. The remnants in (i)–(iii) all bear pitch accents.

(i) They usually ask **how many papers** the candidate reviewed for the journal but they never ask **WHICH ones**. (Romero 1998: 31)

(ii) I know **how many women** there are in the play, but I don't know **how many MEN**. (Merchant 2001: 36)

(iii) I only know **when** she left; I don't know **WHY**. (Romero 1998: 36)

In (i), the interrogative determiner contrasts with its counterpart in the antecedent clause. In (ii), the restriction of the interrogative phrase contrasts with the restriction of its correlate. In (iii), the entire interrogative phrase contrasts with its correlate.

[21] Even when there is no correlate (when the remnant is sprouted, in Chung et al.'s (1995) terms), the remnant still bears a pitch accent:

(i) sohrāb dustdoxtar-esh-o did vali ne-midunam **KEI**.
Sohrab girlfriend-his-OBJ saw.3SG but NEG-know.1SG when
'Sohrab saw his girlfriend, but I don't know when.

It is unclear what *kei* 'when' is contrasting with in this example. Such cases do not impinge on the analysis proposed in section 5, however, since I argue that focus fronting in sluicing is not licensed pragmatically but rather syntactically by an ellipsis feature that also triggers the deletion of TP.

remnants in these examples results in ungrammaticality, as shown in (88)–(90).

(88) *man midunam ke sohrāb ye ketāb xaride va rāmin
I know.1SG that Sohrab one book bought.3SG and Ramin
midune che ketāb-i.
know.3SG what book-IND

(89) *sohrāb be man goft che ketāb-i-ro dust dāre
Sohrab to me said.3SG what book-IND-OBJ friend have.3SG
vali na-goft che film-i-ro.
but NEG-said.3SG what movie-IND-OBJ

(90) *faqat midunam kojā sohrāb dustdoxtar-esh-o did;
only know.1SG where Sohrab girlfriend-his-OBJ saw.3SG
ne-midunam kei.
NEG-know.1SG when

There is a class of sluices, however, that seem not to bear out this prediction. Consider the examples in (91)–(92). The remnants in these sluices do not bear a pitch accent, which is the usual phonological realization of focus.

(91) midunim che ketabā-i-ro sohrāb xaride va rāMIN
know.1PL what book.PL-IND-OBJ Sohrab bought.3SG and Ramin
ham midune *che* ketāb-i.
also know.3SG what book-IND
'We know what books Sohrab bought, and Ramin also knows what books.'

(92) mā midunim sohrāb chandtā ketāb xaride vali rāMIN
we know.1PL Sohrab how.many book bought.3SG but Ramin
hanuz ne-midune *chandtā*.
yet NEG-know.3SG how.many
'We know how many books Sohrab bought, but Ramin doesn't yet know how many.'

Nonetheless, the remnants in these examples are perceptually distinct from surrounding material. Impressionistically, they are louder, indicated here with italics. I argue that the remnants in (91)–(92), while lacking pitch accents, do indeed contain foci, though not of the ordinary kind. They are instances of what is known as SECOND OCCURRENCE FOCUS (Partee 1991, 1999; Rooth 1992, 1996; Hajičcová, Partee & Sgall 1998; and much subsequent work).

In certain contexts, foci do not receive a canonical phonological realization with a pitch accent. Consider the English example in (93).

(93) Our grad students only quote the FAculty$_F$. No, the UNdergrads$_F$ only quote the *faculty*$_F$.

(modified from Büring 2006: 7)

The adverb *only* is focus sensitive, associating with a focused element somewhere in its scope. In the first sentence of (93), *only* is associated with *the faculty*, which bears a pitch accent as expected. (The sentence expresses universal quantification over the people who the grad students quote.) I have marked the fact that it is a focus with a subscripted F. In the second sentence of (93), *only* occurs another time, again associating with *the faculty*. This is the second occurrence focus, which is not realized with a pitch accent like a canonical focus, but rather with increased energy (it is louder) and increased duration (Rooth 1996, Bartels 2004, Beaver et al. 2007). As above, I indicate this type of phonological realization with italics.

While the formal source of second occurrence focus is still obscure, the environment that licenses it is well understood. Building on a proposal by Rooth (1996), Büring (2006), argues that whether or not a focus will be realized as a second occurrence focus is determined by the principle in (94).

(94) *Domain theory of primacy*
Among two foci in a sentence, the primary focus is the focus whose domain contains the domain of the other.

(Büring 2006: 8)

In other words, for a sentence that contains two foci, the primary focus, realized with a pitch accent, is the one whose domain is larger and contains the domain of the other focus, which is consequently realized as a second occurrence focus. The relevant notion of 'domain' here is the same as the scope of one of Rooth's $\sim$ operators (see section 3.3).

Büring's account correctly derives the focus structure of the second sentence of (93), which is repeated in (95) with bracketing to mark focus domains. *Only* is identified with a focus operator, $\sim_4$, that takes the verb phrase in its scope and is associated with the focus on *the faculty* (indicated through coindexation).

(95) [No, the UNdergrads$_{F3}$ only [quote *the faculty*$_{F4}$]$\sim_4$]$\sim_3$.

But there is a larger focus domain, that of $\sim_3$, which takes scope over the entire sentence and is associated with new information. The specific conception of newness that Büring adopts is that embodied in Schwarzschild's (1999) definition of GIVENness:

(96) GIVEN*ness*
An utterance U counts as GIVEN iff it has a salient antecedent A and
(i) if U is of type *e*, then A and U corefer;
(ii) otherwise: modulo $\exists$-type shifting, A entails the existential F-closure of U.

(Schwarzschild 1999: 151)

The root level operator, $\sim_3$ in (95), associates with all nonGIVEN material in the sentence, namely *the undergrads*. Any foci not associated with $\sim_3$ are accordingly GIVEN. It follows from this that second occurrence foci are always GIVEN. In (95), *the faculty* is only associated with $\sim_4$, whose domain is contained within the domain of $\sim_3$. If *the faculty* were made nonGIVEN by associating it with the root level operator, the principle in (94) would require that it be realized as a primary focus. The foci on *the faculty* and *the undergrads* would share a single domain, that of $\sim_3$.

Crucially, Büring assumes that a single focus can associate with more than one $\sim$ operator. This happens when the focus of a smaller domain is nonGIVEN information, as in the first sentence of (93), repeated in (97).

(97) [Our grad students only quote [the FAculty$_{F1,2}$] $\sim_2$] $\sim_1$.

The faculty here is new information, which must be associated with the root level focus operator, $\sim_3$, as well as with the operator identified with *only*, $\sim_2$.

In the rest of this section, I show that the recalcitrant Farsi example in (92), repeated in (98) below, has a focus structure isomorphic to that of (95). In section 3.3, I proposed that Spec-FP constitutes its own focus domain with a $\sim$ operator adjoined to the phrase that fills it. The remnant of the sluice, *chandtā* 'how many', which by hypothesis is situated in Spec-FP, is thus associated with $\sim_2$. But the subject of the matrix clause, *rāmin* 'Ramin', also bears a focus that is associated with the root level focus operator $\sim_1$.

(98) mā midunim sohrāb chandtā ketāb xaride vali [rāMIN$_{F1}$
we know.IPL Sohrab how.many book bought.3SG but Ramin
hanuz ne-midune [*chandtā*$_{F2}$] $\sim_2$] $\sim_1$.
yet NEG-know.3SG how.many
'We know how many books Sohrab bought but Ramin doesn't yet know how many.'

The configuration in (98) is precisely the one that licenses second occurrence focus. According to the definition in (94), the focus on *rāmin* 'Ramin' is realized as a primary focus with a pitch accent since its domain contains the domain of *chandtā* 'how many', which gets a noncanonical realization without a pitch accent. Sentences like (98), instead of presenting a problem for deriving sluicing in Farsi by focus fronting, thus constitute a strong argument for it. Büring's account of second occurrence focus only works for these examples if the remnant constitutes its own focus domain by being situated in Spec-FP.

Before moving on, I should mention that the literature on second occurrence focus has generally concentrated on foci associated with focus-sensitive adverbs like *only* (as in the original example in (93)). Büring's theory, which defines the licensing environment for second occurrence focus in terms of Roothian $\sim$ operators, predicts that the phenomenon should not be

restricted in this way. Any time a focus domain is contained within another, larger domain, a noncanonical realization of the smaller domain's focus should be possible, regardless of whether it is associated with an adverb or not. Contrastive foci, for instance, should be able to be realized as second occurrence foci given the right conditions. The adjectives in (99a) bear pitch accents since they contrast with each other. Rooth (1992: 79–82) analyzes such cases as involving a focus interpretation operator adjoined to the DPs containing the adjectives. Since both *green* and *red* are nonGIVEN in this example, they receive a canonical realization with a pitch accent. In the continuation in (99b), a similar contrastive focus structure is set up, but, while *blue* is new, *red* is GIVEN from the preceding sentence. It is not associated with the root $\sim$ operator, thereby satisfying the condition in (94) for being a second occurrence focus.

(99) (a) OK, [so I'll press [the $\text{GREEN}_{F1,3}$ button] $\sim_1$ when [the $\text{RED}_{F2,4}$ button] $\sim_2$ starts blinking] $\sim_{3,4}$.
(b) No, [you press [the $\text{BLUE}_{F5,7}$ button] $\sim_5$ when [the $\textbf{red}_{F6}$ button] $\sim_6$ starts blinking] $\sim_7$.

(Büring 2006: 17)

Büring's intution, which I share, is that *red* is indeed realized as a second occurrence focus, without a pitch accent but with greater prominence. If true, this suggests that second occurrence focus in English is not restricted to occuring only with focus-sensitive adverbs. I have made a parallel argument for focus fronting in Farsi. The focus on the element in Spec-FP, which can be realized as a second occurrence focus given the right conditions, is also not associated with a focus-sensitive adverb.

4.3 *Summary*

The preceding section has been an effort to understand how the interrogative remnant in Farsi sluicing escapes deletion. This happens, I have argued, by an operation of focus fronting. The question remains why this movement happens at all since, in contrast to English *wh*-movement, Farsi focus fronting is optional. Said another way, what is the reason for the contrast in (100)?

(100) rāmin ye chiz-i xaride.
Ramin one thing-IND bought.3SG
'Ramin bought something.'
(a) hads bezan [$_{TP}$ rāmin chi xaride].
guess hit.2SG Ramin what bought.3SG
'Guess what Ramin bought.'
(b) *hads bezan ~~[$_{TP}$ rāmin chi xaride]~~.
guess hit.2SG Ramin what bought.3SG
Intended: 'Guess what.'

The *wh*-phrase *chi* 'what' does not have to front in the nonelliptical clause in (100a). Leaving it in situ is ungrammatical, however, if TP is deleted as in (100b). In the next section, I propose that a formal property of sluicing itself forces the interrogative phrase to front.

5. Sluicing and obligatory movement

At its core, ellipsis is a phenomenon that challenges how we think about the interfaces between syntax and other components of the grammar. It has both semantic and phonological effects that must be coordinated – the constituent that is deleted at PF can only go missing when semantic identity, however defined, holds between the deleted phrase and its antecedent. In the theory of ellipsis proposed by Merchant (2001, 2004, 2008), both of the effects of ellipsis are triggered by a single syntactic feature called E. For English sluicing, E is located on C, from where at PF it issues the instruction that its sister, TP, not be pronounced. In the semantic component, E imposes an identity requirement on TP, thus ensuring that it is deleted only when there is a suitably identical antecedent TP.

The E feature has to be constrained in a given language so that only the elliptical constructions that are actually attested are derived. It cannot be freely assigned since then, counter to fact, we would expect that any phrase could be elided. The ellipsis feature must come along with licensing restrictions stipulating where it can occur. In English sluicing, E is only licensed on C. In Farsi, E is licensed on F.

This fact alone is enough to derive obligatory focus fronting under sluicing. We only have to make the additional, uncontroversial assumption that the focus head F is only present in the extended verbal projection when its specifier is filled. Rizzi (1997: 287f.) formalizes this in a 'criterion' that requires that the Foc(us) and Top(ic) heads must either have their specifiers filled or be absent. Similarly, Brody (1990: 207) assumes that, in Hungarian, the focus projection is only present when it introduces a focused element.

Given that E is only found on the F head in Farsi and that F is only present when its specifier is occupied, the illicit configuration in (100b) is ruled out. Deletion of TP without raising an interrogative phrase to Spec-FP is not possible since this would require the E feature to be present in the absence of F. A more perspicuous presentation of this argument is found in Table 1. Logically, there are four ways the F head and E feature can be combined in a single derivation. If both are present, as in the upper left cell, the result is a sluice. If E is absent, as in the lower row, a full question will result, with the *wh*-phrase either fronted or in situ depending on whether F is also present. The upper right cell is empty since it is not possible for E to occur in the absence of F.

As presented, the system outlined above overgenerates. There are no restrictions placed on what the remnant in sluicing can be, and so we expect

	F PRESENT	F ABSENT
E PRESENT	SLUICING [FP wh F[E] ~~[TP…⟨wh⟩…]~~]	–
E ABSENT	FOCUS-FRONTED QUESTION [FP wh F [TP …⟨wh⟩…]]	IN SITU QUESTION [TP …wh…]

Table 1
Possible derivations if E only occurs on F

that any phrase able to occur in Spec-FP, including noninterrogative ones, should be able to serve as a good remnant. In fact, as shown in (101)–(102), noninterrogative phrases do not license sluicing. (The subject in the antecedent clause must also be focus fronted for the elided TP to have an identical antecedent.)[22]

(101) *midunam ke sohRĀB [TP ⟨sohrāb⟩ otāq-esh-o tamiz kard]
know.1SG that Sohrab room-his-OBJ clean did.3SG
vali ne-midunam ke [FP rosTAM ~~[TP ⟨rostam⟩~~
but NEG-know.1SG that Rostam
~~otāq-esh-o tamiz kard]~~].
room-his-OBJ clean did.3SG
Intended: 'I know that Sohrab cleaned his room, but I don't know whether Rostam did.'

(102) *fekr mikonam oTĀQ-esh-o [TP sārā ⟨otāq-esh-o⟩ tamiz
thought do.1SG room-her-OBJ Sara clean
karde] va ham fekr mikonam [FP māSHIN-esh-o
did.3SG and also thought do.1SG car-her-OBJ
~~[TP sārā ⟨māshin-esh-o⟩ tamiz karde]]~~.
Sara clean did.3SG
Intended: 'I think that Sara cleaned her room, and I also think that Sara cleaned her car.'

In English, a similar problem arises, but in a slightly different form. Not all complementizers license sluicing, so just putting E on C does not work.

[22] For Merchant (2001), the relevant notion of identity is mutual entailment modulo ∃-closure of free variables and focused elements. The target TP denotes the proposition ∃*x*[**clean**(**his room**)(*x*)], where the trace left behind by focus fronting the agent *rostam* 'Rostam' has been existentially bound. For the antecedent TP to be entailed by the target TP, it must contain an existentially bound variable in the same position. Focus fronting the agent in the antecedent does exactly this. The antecedent TP expresses the proposition ∃*x*[**clean**(**his-room**)(*x*)], which is identical to the proposition expressed by the target TP. A similar issue does not arise in normal sluicing cases since the correlate is an indefinite DP that itself expresses existential quantification.

Deleting the TP sisters of *for* and *that*, for instance, is ungrammatical, as shown in (103) and (104) respectively. The complementizers of embedded polar questions, *whether* and *if*, also do not license sluicing (105). Nor does the null complementizer in a relative clause allow TP ellipsis (106).

(103) *Sue asked Bill to leave, and [$_{CP}$ **for** ~~[$_{TP}$ Bill to leave]~~] was unexpected.

(104) *Even though May hopes [$_{CP}$ **that** ~~[$_{TP}$ someone interesting is speaking tonight]~~], she doubts that anyone interesting is speaking tonight.

(105) *Although [$_{CP}$ **whether/if** ~~[$_{TP}$ John made it to work on time]~~] is unclear, Sue thinks John made it to work on time. (Lobeck 1995: 55)

(106) *We thought it was Abby who stole the car, but it was Ben [$_{CP}$ who ~~[$_{TP}$ ⟨who⟩ stole the car]~~]. (Merchant 2001: 59)

Working within Government and Binding theory, Lobeck (1995: 54–62) attempts to capture the distribution of sluicing in English through a condition on where null pronominal elements (*pro*) may occur (for her, the gap in ellipsis does not arise through deletion; see fn. 2). The licensing constraint, which she proposes applies to sluicing as well as to verb phrase ellipsis and noun phrase ellipsis, is given in (107).

(107) *Licensing and identification of* pro
An empty, non-arbitrary pronominal must be properly head-governed, and governed by an X^0 specified for strong agreement.
(Lobeck 1995: 4)

The C in a constituent question is a good head-governer since it agrees in the feature [+wh] with a *wh*-phrase in its specifier.[23] This agreement is strong since the *wh*-phrase it agrees with realizes the [+wh] feature overtly.

The ungrammatical sluices in (103)–(105) are blocked because the Cs in these examples do not agree with overt *wh*-phrases in their specifiers. Lobeck rules out the ungrammatical sluice in (106) by assuming that the *wh*-operator in a relative clause is not strong, i.e. [−wh], and so does not satisfy the licensing constraint in (107). Lobeck's reasoning for the relative clause case (106) is difficult to follow, but I share her intuition that the *wh*-phrases in relative clauses and in constituent questions are different. I assume that they bear different interpretable features: op for the *wh*-phrase in a relative clause

[23] Lobeck (1995: 16) defines head government as follows:

(i) *Head government*
X head-governs Y iff
(i) a. X is a head
b. X m-commands Y
(ii) X = {[±V, ±N] AGR, Tense}
(iii) a. no barrier intervenes
b. Relativized Minimality is respected

and wh for the *wh*-phrase in a constituent question.[24] The complementizers in relative clauses and constituent questions accordingly have to differ in their featural content as well. A relative clause is headed by $C_{[u\text{op}^*]}$, while a constituent question is headed by $C_{[Q,\ u\text{wh}^*]}$.[25]

Lobeck's licensing requirement relies crucially on specifier-head agreement, a syntactic relation explicitly banned in Minimalism (Chomsky 2001: 3–5). Merchant (2001: 60. fn. 12) restates Lobeck's licensing condition as a feature compatibility requirement that specifies what heads E can occur on. I interpret this as a restriction on the feature bundles that are possible in the Lexicon. In English sluicing, the E feature comes bundled with $C_{[Q,\ u\text{wh}^*]}$, which restricts TP deletion to constituent questions.[26] It might be possible to derive the ungrammaticality of noninterrogative remnants in Farsi in a similar fashion.

Suppose, for instance, that F not only contributes focus semantics to the meaning of the clause but also, in the case of constituent questions, question semantics. This assumption is not completely random. There have been a number of recent proposals which, by equating the semantics of questions and focus, have been successful in accounting for some previously mysterious phenomena, such as intervention effects (Beck 2006, Cable 2007). Adopting this proposal for Farsi, there are now two F heads in the Lexicon, one that occurs in questions, $F_{[Q]}$, and another in declaratives, F.

Sluicing in Farsi can be restricted to constituent questions by saying that E only occurs on $F_{[Q]}$. This blocks noninterrogative sluices like (101), but it has a negative side effect. It allows the ungrammatical configuration in which the interrogative phrase is deleted with the rest of the question (100). This point is made visually in Table 2. As before, there are four possible ways of combining E and $F_{[Q]}$ in a single derivation. Without $F_{[Q]}$, as in the righthand column, only declarative structures are derived. Noninterrogative sluicing, which corresponds to the upper right cell, is ruled out correctly since E cannot occur in a derivation without $F_{[Q]}$. In the bottom left cell, $F_{[Q]}$ occurs without E, producing both fronted and in situ questions. This optionality results from abandoning the requirement that $F_{[Q]}$ have something in its specifier (cf. Brody 1990, Rizzi 1997). This is necessary since $F_{[Q]}$, which now

[24] While the *wh*-phrases found in relative clauses and interrogative phrases look alike in English, and are treated alike, the syntax is nonetheless able to distinguish between them. In Hungarian, for instance, the interrogative phrase of a constituent question only raises to Spec-FP, while the *wh*-operator in a relative clause moves all the way to Spec-CP (Horvath 1986: 35–51). In order to derive this distributional difference, the featural composition of the two types of *wh*-phrase must be different. I have offered one way of doing this in the main text.

[25] Uninterpretable features are prefixed with '*u*'. Features bearing an asterisk '*' are bundled with an EPP feature which requires that they be checked locally.

[26] Merchant (2001: 60) states that E requires a C bearing the features [+Q, +wh]. I find the representational scheme given in the main text more perspicuous.

	$F_{[Q]}$ PRESENT	$F_{[Q]}$ ABSENT
E PRESENT	'IN SITU SLUICING' *$[_{FP}\ F_{[Q,\ E]}\ \sout{[_{TP}\ \ldots wh\ldots]}]$ SLUICING $[_{FP}\ wh\ F_{[Q,\ E]}\ \sout{[_{TP}\ \ldots\langle wh\rangle\ldots]}]$	–
E ABSENT	IN SITU QUESTION $[_{FP}\ F_{[Q]}\ [_{TP}\ \ldots wh\ldots]]$ FOCUS-FRONTED QUESTION $[_{FP}\ wh\ F_{[Q]}\ [_{TP}\ \ldots\langle wh\rangle\ldots]]$	DECLARATIVE $[_{TP}\ \ldots]$

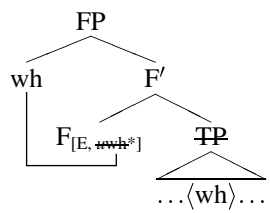
Table 2
Possible derivations if E only occurs on $F_{[Q]}$

contributes the clause's question semantics, must appear in the derivation of all constituent questions, including in situ questions. Adding an E feature, as in the upper left cell, thus produces both sluicing and the illicit 'in situ sluicing' (derived by deleting the TP of an in situ question).

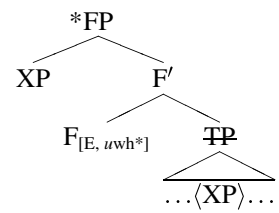
What we have tried to do is restrict the E feature to the head that introduces question meaning – essentially assimilating Farsi to English – in an effort to derive only sluices with interrogative remnants. This attempt fails since, for the *wh*-remnant always to raise out of the elided TP, E must be bundled on a head bearing [*u*wh*], an uninterpretable wh feature bearing the EPP feature. But while English has a head that bears such a feature, $C_{[Q,\ u\text{wh*}]}$, Farsi does not. This is, of course, just another way of saying that Farsi is a *wh*-in situ language.

The observation I have been working towards is that sluicing is not simply the by-product of a language's syntax, it has a syntax of its own. Specifically, sluicing requires that the remnant, regardless of how it escapes deletion, be an interrogative phrase. This can be modeled formally by bundling a [*u*wh*] feature with E itself. The E feature will accordingly only be licensed when it is in a local configuration with a *wh*-phrase. For Farsi, when E is present, Spec-FP must be occupied by a *wh*-phrase, as shown in (108a). If, instead, that position is occupied by a noninterrogative phrase, as in (108b), [*u*wh*] will go unchecked and the derivation will crash.

(108) a.



b.



This is what happens in a noninterrogative sluice like (101), repeated as (109) below.

(109) *midunam ke sohRĀB [$_{TP}$ ⟨sohrāb⟩ otāq-esh-o tamiz kard]
know.1SG that Sohrab room-his-OBJ clean did.3SG
vali ne-midunam ke [$_{FP}$ rosTAM F$_{[E,\ u\text{wh*}]}$
but NEG-know.1SG that Rostam
~~[$_{TP}$ ⟨rostam⟩ otāq-esh-o tamiz kard]~~].
room-his-OBJ clean did.3SG
Intended: 'I know that Sohrab cleaned his room, and I also know that Rostam did.'

The noninterrogative DP that raises to Spec-FP, *rostam* 'Rostam', is unable to check [*u*wh*] on F, and so the derivation crashes.

The differences (and similarities) between English and Farsi sluicing are summarized in (110), which shows how, in each language, the ellipsis feature is combined with the appropriate licensing head in the Lexicon.[27]

(110) English: C$_{[Q,\ u\text{wh*}]}$ + [E, *u*wh*] → C$_{[Q,\ E,\ u\text{wh*}]}$
Farsi: F + [E, *u*wh*] → F$_{[E,\ u\text{wh*}]}$

In English, the fact that E comes bundled with a [*u*wh*] feature is obscured because E occurs on the complementizer of a constituent question, which bears an identical feature itself. Looking at a *wh*-in situ language is therefore more useful for teasing the syntax of sluicing apart from the syntax of the rest of the language. Since, in Farsi, the ellipsis feature occurs on a head that is not specified for clause type, we see more clearly the composition of the feature that triggers sluicing.

6. Conclusion

I have proposed here that sluicing in Farsi is derived by movement of an interrogative phrase to the specifier of a focus projection, Spec-FP, followed by deletion of TP. Since focus fronting applies equally to all major constituents of the clause, we might expect that the range of possible remnants in sluicing would not be restricted to interrogative phrases. This expectation is not borne out; Farsi allows only *wh*-remnants, a requirement that I have modeled by bundling the ellipsis feature E with an uninterpretable EPP-laden wh feature. This property of sluicing – obscured in a *wh*-fronting language like English – is revealed in Farsi, a language that is otherwise *wh*-in situ.

[27] I assume that feature bundles are sets, in which case adding [*u*wh*] to a head already possessing that feature does not result in there being two copies. This strikes me as the null hypothesis, though see Manetta 2006: 49–66 for a proposal that more structured feature bundles – specifically, *n*-tuples of sets of features – are needed in order to model language.

If this analysis is correct, then sluicing no longer forms a natural class with verb phrase ellipsis and noun phrase ellipsis in quite the same way. Since Lobeck (1995), the literature on ellipsis has largely assumed that the three constructions represent the realization of a single ellipsis process applied to different phrasal constituents: sluicing is equated with deletion of TP, verb phrase ellipsis with deletion of vP, and noun phrase ellipsis with deletion of NP. I have preserved this intuition here by keeping E as the feature triggering PF deletion in sluicing, but a licensing requirement has been added to the sluicing version of E that is not found with its verb phrase or noun phrase ellipsis counterparts (since neither requires a *wh*-remnant). While the three elliptical processes are no longer identical, they still bear a family resemblance to one another. I suspect that there are also licensing requirements specific to verb phrase ellipsis and noun phrase ellipsis which, once found, will diminish the resemblance even more. López & Winkler (2000) argue, for instance, that verb phrase ellipsis requires verum focus in order to be licensed.

There is one question that I have yet to address: Why is sluicing restricted to constituent questions at all? We can imagine a large number of possible answers to this question, but by stating the requirement that a sluice have a *wh*-remnant as part of the E feature's lexical entry, I exclude a syntactic answer. In a Minimalist conception of the grammar, while the syntax draws from the Lexicon to construct syntactic objects, the principles organizing the Lexicon are independent of those directing the syntax. This means that, in order to account for the regularities found in the Lexicons of different languages, we have to look outside of the domain of syntax. I speculate that the explanation for the lexical regularity uncovered here – that is, the existence of a lexical item [E, *u*wh*] in both English and Farsi – comes from general pragmatic principles, which are not applicable solely in ellipsis contexts. Pseudosluicing in Japanese (see section 2.1) functions very much like real sluicing, and yet it has a structure that is quite distinct and that does not involve deletion. Whatever pragmatic principles are at work here, they are conventionalized in languages like Farsi and English in the form of a lexical item that triggers deletion as well as movement of a *wh*-phrase. This discussion has been mostly speculative, but following this line of reasoning, I believe, has the potential to illuminate more clearly the syntax of sluicing and how it interacts with principles of the pragmatics.

APPENDIX

Island insensitivity in Farsi sluicing

Sluicing is famously able to repair island violations (Ross 1969: 276f.). In (A1), for instance, the remnant originates by hypothesis inside a relative clause, resulting in a Complex NP Constraint violation. Yet, the sluice is grammatical.

(A1) They want to hire someone who speaks a Balkan language, but I don't remember which (Balkan language) ~~[they want to hire someone who speaks ⟨which Balkan language⟩]~~.

(Merchant 2001: 87)

In what follows, I show that sluicing in Farsi has similar island ameliorating effects.

Complex NP Constraint

Consider first the Complex NP Constraint, which bans extraction from CPs contained within a noun phrase. Focus fronting an interrogative phrase out of a relative clause is ungrammatical, as illustrated in (A2a). If the clause containing the island is sluiced, however, the sentence becomes grammatical (A2b). (Islands are bracketed in the following examples.).

(A2) (a) *unā mixān [ye nafar-i-ro ke yeki az zabānāye
they want.3PL one person-IND-OBJ that one from language.PL
urupāyi-ro balad bāshe] estaqdām konand vali
European-OBJ knowledgeable be.3SG hiring do.3PL but
yād-am nist kodum zabān unā mixān [ye
memory-my NEG.is which language they want.3PL one
nafar-i-ro ke ⟨kodum zabān⟩ balad bāshe]
person-IND-OBJ that knowledgeable be.3SG
estaqdām konand.
hiring do.3PL
Intended: 'They want to hire someone who knows one of the European languages, but I don't know which language.'

(b) unā mixān [ye nafar-i-ro ke yeki az zabānāye
they want.3PL one person-IND-OBJ that one from language.PL
urupāyi-ro balad bāshe] estaqdām konand vali
European-OBJ knowledgeable be.3SG hiring do.3PL but
yād-am nist kodum zabān.
memory-my NEG.is which language
'They want to hire someone who knows one of the European languages, but I don't know which language.'

The Complex NP Constraint in Farsi also prevents extraction from sentential subjects and complements.[28] CPs that occur as the argument of a verb are headed by the determiner *in* (which is marked with the object marker *rā* when

[28] While sentential arguments and nouns modified by relative clauses have a similar structure – in both, CP is dominated by DP – they stand in different relations to the noun heading the DP. A relative clause modifies the head noun, while the CP of a sentential argument clearly does not involve modification of the same sort. The Complex NP

the CP occurs in complement position).[29] Movement out of sentential subjects and complements is ungrammatical, e.g. (A3a) and (A4a) respectively. Again, sluicing repairs the violation, as shown in (A3b) and (A4b).

(A3) (a) *[in ke mohammad sohrāb-o kosht] āshkār
this that Mohammad Sohrab-OBJ killed.3SG revealed
shod vali bā chi [in ke mohammad sohrāb-o
became.3SG but with what this that Mohammad Sohrab-OBJ
⟨bā chi⟩ kosht] hanuz āshkār na-shode.
killed.3SG yet revealed NEG-became.3SG
Intended: 'That Mohammad killed Sohrab was revealed, but it has not yet been revealed with what.'

(b) [in ke mohammad sohrāb-o kosht] āshkār
this that Mohammad Sohrab-OBJ killed.3SG revealed
shod vali bā chi hanuz āshkār na-shode.
became.3SG but with what yet revealed NEG-became.3SG
'That Mohammad killed Sohrab was revealed, but it has not yet been revealed with what.'

(A4) (a) *polis [in-o ke mohammad sohrāb-o koshte]
police this-OBJ that Mohamad Sohrab-OBJ killed.3SG
e'lām kardan vali bā che chiz-i polis [in-o
announcement did.3PL but with what thing-IND police this-OBJ
ke mohammad sohrāb-o ⟨bā che chiz-i⟩ koshte]
that Mohammad Sohrab-OBJ killed.3SG
hanuz e'lām na-kardan.
yet announcement NEG-do.3PL
Intended: 'The police announced that Mohammad killed Sohrab, but they haven't yet announced with what.'

(b) polis [in-o ke mohammad sohrāb-o koshte]
police this-OBJ that Mohammad Sohrab-OBJ killed.3SG
e'lām kardan vali bā che chiz-i hanuz
announcement did.3PL but with what thing-IND yet
e'lām na-kardan.
announcement NEG-do.3PL
'The police announced that Mohammad killed Sohrab, but they haven't yet announced with what.'

Constraint nonetheless applies equally to both, a fact captured in Ross's original (1967) formulation of the constraint. It reads as follows: 'Elements dominated by a sentence which is dominated by a noun phrase cannot be questioned or relativized' (118). If DP is substituted for 'noun phrase', then extraction from both sentential arguments and relative clauses is correctly ruled out.

[29] Sentential complements can also occur without being embedded in a noun phrase, in which case they obligatorily follow the verb, e.g. (A49). These CPs, since they are not islands for extraction, are not relevant here.

COORDINATE STRUCTURE CONSTRAINT

Focus fronting in Farsi also obeys the Coordinate Structure Constraint, which bans both extraction of a conjunct and extraction out of a conjunct. Both types of violation are shown in (A5a) and (A6a), respectively. The corresponding grammatical sluices are given in (A5b) and (A6b).

(A5) (a) *mahin ye vidio va ye ketāb xarid vali
Mahin one video and one book bought.3SG but
ne-midunam che ketāb-i mahin [ye vidio
NEG-know.1SG what book-IND Mahin one video
va ⟨che ketāb-i⟩] xarid.
and bought.3SG
Intended: 'Mahin bought a video and a book, but I don't know what book.'

(b) mahin ye vidio va ye ketāb xarid vali
Mahin one video and one book bought.3SG but
ne-midunam che ketāb-i.
NEG-know.1SG what book-IND
'Mahin bought a video and a book, but I don't know what book.'

(A6) (a) *rāmin raft [ye ketāb xarid va ye film
Ramin went.3SG one book bought.3SG and one movie
did] vali ne-midunam che film-i rāmin raft
saw.3SG but NEG-know.1SG what movie-IND Ramin went.3SG
[ye ketāb xarid va ⟨che film-i⟩ did].
one book bought.3SG and saw.3SG
Intended: 'Ramin went and bought a book and saw a movie, but I don't know what movie.'

(b) rāmin raft [ye ketāb xarid va ye film
Ramin went.3SG one book bought.3SG and one movie
did] vali ne-midunam che film-i.
saw.3SG but NEG-know.1SG what movie-IND
'Ramin went and bought a book and saw a movie, but I don't know what movie.'

ADJUNCT CONSTRAINT

Sluicing in Farsi alleviates adjunct island violations as well. (A7a) shows that focus fronting a *wh*-phrase out of an adjunct is ungrammatical. (A7b) is a parallel example in which the adjunct is deleted by sluicing, repairing the violation.

(A7) (a) *rāmin [chon ye doxtar-i-ro dust dāre] raft gol
Ramin since one girl-IND-OBJ friend have.3SG went.3SG flower
bexare. be mā na-goft kodum doxtar-o rāmin [chon
buy.3SG to us NEG-said.3SG which girl-OBJ Ramin since
⟨kodum doxtar-o⟩ dust dāre] raft gol bexare.
friend have.3SG went.3SG flower buy.3SG
Intended: 'Ramin went to buy flowers since he likes a girl. He didn't tell us which girl.'

(b) rāmin [chon ye doxtar-i-ro dust dāre] raft gol
Ramin since one girl-IND-OBJ friend have.3SG went.3SG flower
bexare. be mā na-goft kodum doxtar.
buy.3SG to us NEG-said.3SG which girl
'Ramin went to buy flowers since he likes a girl. He didn't tell us which girl.'

'Left Branch' Condition

The last constraint on movement is the Left Branch Condition, which bans extraction of 'the leftmost [NP] constituent of a larger NP' (Ross 1967: 207). This rules out, for example, *wh*-movement of a possessor without piedpiping the NP it modifies:

(A8) *Whose did Oscar take [$_{DP}$ ⟨whose⟩ [$_{NP}$ licorice]]?

Sluicing seems, at least at first, to alleviate the violation that results from extracting a possessor. The sluice in (A9), for instance, is grammatical.

(A9) Oscar took someone's licorice but he won't say [$_{CP}$ whose ~~[$_{TP}$ he took [$_{DP}$ ⟨whose⟩ [$_{NP}$ licorice]]]~~].

There is, however, another possible source for the sluice in (A9). A Left Branch Condition violation is avoided altogether in the alternate derivation of (A10), in which the entire possessive DP raises to Spec-CP. The independent ellipsis of NP *licorice* creates the appearance of an island violation.

(A10) … he won't say [$_{CP}$ [$_{DP}$ whose ~~[$_{NP}$ licorice]~~] ~~[$_{TP}$ he took ⟨whose licorice⟩]~~].

Farsi exhibits a movement constraint similar to the Left Branch Condition, even though, as shown in (A11a), the possessor follows its head noun. The two are linked by the *ezāfe* suffix *-e*, which I have so far left out of the interlinear glosses (see also fn.10). Fronting the possessor results in severe ungrammaticality (A11b).[30]

[30] It is hard to know how exactly to construct a Left Branch Condition violation in Farsi, since the structure of DP in Farsi is not straightforward. It is an open question whether one

(A11) (a) rostam [$_{DP}$ [$_{NP}$ ketāb-e] ki]-ro xaride?
Rostam book-EZ who-OBJ bought.3SG
'Whose book did Rostam buy?'
(b) *ki rostam [$_{DP}$ [$_{NP}$ ketāb-e] ⟨ki⟩]-ro xaride?
who Rostam book-EZ -OBJ bought.3SG

The ungrammaticality of extracting the possessor out of a DP (A12a) is repaired by sluicing (A12b).

(A12) (a) *rostam māshin-e ye nafar-i-ro dozdide vali
Rostam car-EZ one person-IND-OBJ stole.3SG but
ne-midunam ki rostam māshin-e ⟨ki⟩-ro dozdide.
NEG-know.1SG who Rostam car-EZ -OBJ stole.3SG
Intended: 'Rostam stole someone's car, but I don't know who.'
(b) rostam māshin-e ye nafar-i-ro dozdide vali
Rostam book-EZ one person-IND-OBJ stole.3SG but
ne-midunam ki.
NEG-know.1SG who
'Rostam stole someone's car, but I don't know who.'

The problem we confronted in English does not arise in Farsi since possessor DPs in Farsi never license noun phrase ellipsis. The NP *māshin* 'car' in the answer of (A13), for example, cannot go missing.

(A13) Q: māshin-e che kesi birun-e?
car-EZ what someone outside-is
'Whose car is outside?'
A: *[$_{DP}$ ~~[$_{NP}$ māshin-e]~~ rostam] birun-e.
car-EZ Rostam outside-is
Intended: 'Rostam's (car) is outside.'

OTHER CONSTRAINTS ON MOVEMENT

There are some restrictions on extraction that cannot be examined in Farsi. Most prominently, the COMP-trace effect, violations of which are repaired by sluicing in English, is not active. Extraction of subjects, as in (A14), is grammatical with or without the complementizer *ke* present.

(A14) kodum kāregar fekr mikoni (ke) ⟨kodum kāregar⟩ exrāj
which worker think do.2SG that fired
beshe?
become.3SG
'Which worker do you think will be fired?'

---

expects *ezāfe* to appear and also where the object marker *rā* should appear. I tried all possible combinations of these elements and none yielded a grammatical string.

The fact that *ke* does not participate in the COMP-trace effect might lead one to question whether it is a complementizer at all. See section 3.2 for arguments that *ke* does indeed belong in C.

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