On Wh-Movement under Sluicing

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Abstract. In this study, I provide novel arguments for Fox and Lasnik's (F&L) (2003) analysis of sluicing. F&L assume that in sluicing constructions, *wh*-movement can proceed either locally or non-locally, and whether an occurrence of *wh*-movement is ruled out or not depends on whether it creates a dependency that is required to satisfy Parallelism. If these authors are on the right track, we would predict that *wh*-movement in sluicing constructions could proceed differently from *wh*-movement in non-sluicing contexts. I show that this prediction is correct. The first argument is drawn from English double object constructions, and the second is drawn from Dutch R-pronouns. The supporting facts not only align with the prediction but also follow naturally from Parallelism. Although both cases have been discussed in the literature, I reexamine them from a new perspective.

Keywords. sluicing; *wh*-movement; Parallelism; double object constructions; R-pronouns

- **1. Introduction**. There is a substantial body of research on an ellipsis construction referred to as sluicing, an example of which is provided in (1).
- (1) Somebody just left guess who. (Ross 1969: 252)

From the early stages of research on sluicing, one of the central issues under investigation has been what occupies the position directly following the remnant *wh*-phrase.

In an analysis that treats the ellipsis site as containing a full syntactic structure that is isomorphic to the antecedent (e.g., Chomsky 1972), one would assume that any locality violations, if they occur, are somehow repaired when sluicing applies. Otherwise, a contrast such as that between (2a) and (2b) would remain unaccounted for.

- (2) a. *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.
 - b. They want to hire someone who speaks a Balkan language, but I don't remember which. (Merchant 2001: 87)

Given that the sluiced clause in (2b) is derived just like the interrogative clause in (2a) up to the point when it is sent to PF, it should contain an island with wh-movement occurring out of it in the same way that the question in (2a) does. In light of this, the fact that (2b) is more acceptable than (2a) indicates that sluicing allows for island repair.

On the assumption that sluicing constructions involve *wh*-movement out of a full syntactic structure and that sluicing can repair locality violations, Fox and Lasnik (F&L) (2003) propose that *wh*-movement can proceed in a way that violates locality constraints even in a context that lacks an island. In their analysis, whether an occurrence of *wh*-movement in a sluicing construction is ruled out does not hinge on its compliance with locality constraints; rather, it is determined by whether it creates a dependency that is required to satisfy Parallelism, which is

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discussed in detail in the following section. If F&L's analysis is on the right track, we would predict that *wh*-movement could proceed differently in sluicing constructions than it does in non-sluicing contexts. In this paper, I present two arguments in support of this prediction.

The remainder of this paper is organized as follows. Section 2 offers an overview of F&L's analysis with particular attention to the nature of Parallelism and the conditions under which it is satisfied. This section also considers the prediction that follows from F&L's proposal. Section 3 provides two arguments in support of that prediction: the first is based on English double object constructions, and the second draws on Dutch R-pronouns. Finally, Section 4 concludes the paper.

2. Fox and Lasnik (2003). In this section, I provide an overview of F&L's analysis of sluicing. F&L follow Chomsky (1972) in assuming that (i) an elided clause has an internal structure, which is present throughout the derivation; (ii) the elided clause involves movement of a *wh*-phrase, which occurs overtly to the clause-initial position; and (iii) the *wh*-movement obeys locality constraints, violations of which, if any, are repaired by sluicing. F&L set themselves apart from Chomsky by assuming that *wh*-movement in sluicing constructions obeys an additional constraint, namely, Parallelism. I illustrate what (their version of) Parallelism is and how it can be satisfied. I also touch upon a prediction that F&L's analysis makes, which I show is correct in Section 3.

Let us take (3) as an example.¹

(3) Fred said that I talked to a certain girl, but I don't know which girl Fred said that I talked to to t.

In (3), the wh-movement has taken place out of the elided clause. The base position of the wh-phrase, which is indicated by t, is located at the position parallel to the indefinite NP in the antecedent clause.

In F&L's analysis, the indefinite as well as the *wh*-phrase is interpreted through existential quantification over choice functions. The LF representation of (3) they assume is given in (4).

(4) F&L's analysis of (3) (Fox and Lasnik 2003: 149):

Antecedent clause: $\exists f \lambda f'$ [Fred said that I talked to f'(girl)] Elided clause: which $g \lambda g'$ [Fred said that I talked to g'(girl)]

In the antecedent clause in (4), the indefinite is interpreted as a variable that ranges over choice functions, each of which takes the set of girls as its argument and returns a member of that set. This variable is bound by the existential quantifier introduced in the clause-initial position. The LF of the antecedent clause results in the interpretation 'there exists a function such that Fred said that the speaker of the sentence talked to the girl selected by the function.'

The position of the existential quantifier in the antecedent clause is parallel to the position of the wh-determiner in the elided clause. F&L treat the wh-determiner as an existential quantifier binding the choice function variable g' in its base position. Crucially, the way the wh-determiner binds the choice function variable g' is parallel to the way the existential quantifier at the top of the antecedent clause binds the choice function variable f'. Since the LFs of the antecedent and

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¹ Here and thereafter, strikethrough represents elided material.

elided clauses are identical, with both involving binding of a choice function variable directly from the clause-initial position, Parallelism is satisfied.²

Note that the LF of the elided clause in (4) results when *wh*-movement proceeds in a way that avoids the intermediate landing sites between its base position and final scope position. The derivation in this case is illustrated in (5).

(5) [CP [which girl] [TP Fred [
$$\nu$$
P said [CP that I [ν P talked to t]]]]]

On the other hand, when *wh*-movement proceeds successive-cyclically through the intermediate landing sites, as in (6), the LF representation in (7) is formed.³

(6) [CP [which girl] [TP Fred [
$$\nu$$
P said [CP that I [ν P talked to t]]]]] (7) which $g \lambda g$ [Fred [$g' \lambda g''$ said $g'' \lambda g'''$ that I $g''' \lambda g''''$ talked to g'''' (girl)]]

The LF representation in (7) does not satisfy Parallelism because the way the *wh*-determiner binds the variable in its base position is not parallel to the way the existential quantifier at the top of the antecedent clause binds the variable f.

It is a widely accepted view that one-fell-swoop movement such as the one involved in deriving the LF of the elided clause in (4) is ruled out as violating locality constraints (e.g., the Phase Impenetrability Condition; Chomsky 2000). However, F&L assume that such movement is not ruled out in a case such as (3) since locality violations caused by the movement are circumvented by sluicing. The view that locality violations can be repaired by sluicing dates back to Chomsky's (1972) analysis. The analysis aimed to capture a contrast such as that between (8a) and (8b).

- (8) a. * She kissed a man who bit one of my friends, but Tom does not realize which one of my friends she kissed a man who bit.
 - b. ? She kissed a man who bit one of my friends, but Tom does not realize which one of my friends. (Ross 1969: 276)

In both examples, the indefinite NP in the antecedent clause is contained in an island. Given that in (8b), as well as in (8a), the *wh*-phrase originates in the position parallel to the indefinite NP in the antecedent clause and from that position it moves overtly to the position where it is pronounced, then the movement should occur non-locally, in the sense that it skips (at least) the intermediate Spec, CP:

(9) [CP [which one of my friends]_j [TP she [
$$\nu$$
P kissed a man [CP who_i [ν P t_i bit t_j]]]]]] (non-local)

Provided that the assumptions about the syntax of (8b) are correct, the contrast between (8a) and (8b) should be understood as showing that locality violations can be circumvented by sluicing.

² In the elided clause in (3), the NP *girl* is pied-piped by the *wh*-phrase, but it has been reconstructed to its base position in (4). The assumption that *wh*-movement is followed by reconstruction is crucial in deriving a structure parallel to that of the antecedent clause.

³ F&L assume that wh-movement can proceed through the edge of every maximal projection (see fn. 5). In line with a more recent version of the Minimalist Program (e.g., Chomsky 2000, 2001, 2004), I assume that a wh-phrase can move through the edge of every phase (CP, vP).

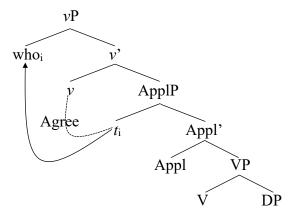
Thus far, I have provided an overview of F&L's analysis of sluicing. The key feature of the analysis can be summarized as follows: in sluicing constructions, wh-movement can proceed either locally or non-locally, and whether an occurrence of wh-movement is ruled out or not depends on whether it creates a dependency that is required to satisfy Parallelism. Wh-movement that violates locality constraints is not ruled out if it results in a quantifier-variable dependency that is identical to the one involved in the antecedent clause.

If F&L's analysis is on the right track, we would predict that *wh*-movement in sluicing constructions could proceed in a different way from *wh*-movement in non-sluicing contexts, since it is constrained by Parallelism. In the following section, I show that this prediction is correct.

- **3. Novel arguments for Fox and Lasnik's (2003) analysis.** In this section, I present two arguments in support of the prediction made under F&L's analysis, namely, that *wh*-movement proceeds differently in sluicing constructions than it does in non-sluicing contexts. In both cases, the supporting facts not only align with the prediction but also follow naturally from Parallelism, which plays a central role in F&L's analysis. The first argument is drawn from English double object constructions (DOCs), and the second is drawn from Dutch R-pronouns. Although both cases have been discussed in the literature, I reexamine them here from a new perspective.
- 3.1. ENGLISH DOUBLE OBJECT CONSTRUCTIONS. The first argument for the prediction under F&L's analysis comes from English DOCs. I begin by illustrating a possible analysis of *wh*-extraction of the first object in a DOC, building on the proposal by Toquero-Pérez (2022). I then turn to an observation, first made by Baker and Brame (1972), which shows that while *wh*-extraction of the first object in a DOC is ruled out in non-sluicing contexts, it is acceptable in sluicing constructions. Finally, I demonstrate that this observation is naturally accounted for by F&L's analysis.

It is known that native speakers of English vary in their acceptance of *wh*-extraction of the first object in a DOC. Based on reports from native speakers who accept an example such as (10), Toquero-Pérez proposes an analysis accounting for the acceptability of such an example. A schematic representation of Toquero-Pérez's analysis is provided in (11).

- (10) Wh-extraction of the first object in a DOC (the judgment is from Toquero-Pérez 2022): Who; did McNulty show t_i a picture of Baltimore?
- (11) Toquero-Pérez's analysis of (10):



Toquero-Pérez assumes that the first object in a DOC originates in the specifier position of ApplP, whose head takes VP, where the second object of the construction originates, as its complement. When *wh*-extraction of the first object takes place, the first object stops at the edge

of vP before it moves further, as illustrated in (11). The movement from Spec, ApplP to Spec, vP is an instance of Spec-to-Spec movement, which is potentially ruled out by the Spec-to-Spec Anti-Locality constraint proposed by Erlewine (2016, 2020). However, the movement is not ruled out if the Principle of Minimal Compliance (PMC) is satisfied.

(12) The Principle of Minimal Compliance (Toquero-Pérez 2022: 171): If a head H with probes P_{[X], [Y]...} Agrees with a Goal G in a feature X, G is accessible to subsequent syntactic operations regardless of locality conditions with respect to probes on the same head H.

Under Toquero-Pérez's analysis, in which the PMC is assumed to be at work, *wh*-extraction of the first object in a DOC is acceptable because *v* agrees with the first object, as illustrated in (11), and as a result, Anti-Locality is bypassed via PMC. Therefore, the first object can move to the sentence-initial Spec, CP position through the Spec, *v*P position. Building on this analysis, I assume that in cases where speakers do not accept *wh*-extraction of the first object in a DOC, Anti-Locality is not suspended, as no independent Agree dependency is established between *v* and the first object.

Baker and Brame (1972) observe that *wh*-extraction of the first object in a DOC, which they judge as unacceptable, becomes more acceptable when sluicing is applied to the construction.⁴ Their examples are given in (13) and (14).

- (13) Wh-extraction of the first object in a DOC (the judgment is from Baker and Brame 1972): *[Which one of the children]_i did John give t_i some crayons?
- (14) John gave one of the children some crayons, but we don't know which one.

(Baker and Brame 1972: 62)

Given the assumption I just made, the contrast between (13) and (14) indicates that *wh*-extraction of the first object proceeds differently in non-sluicing contexts and sluicing constructions: in non-sluicing contexts, the result is ruled out by Anti-Locality, whereas in sluicing constructions, it is not.

The acceptability of wh-extraction of the first object in sluicing constructions can be readily accounted for once Parallelism is taken into consideration. In the antecedent clause in (14), the indefinite is interpreted as a variable, which is bound by the existential quantifier introduced in the clause-initial position. When wh-extraction of the first object in the elided clause proceeds successive-cyclically, leaving traces in the intermediate landing sites, the variable in the base position of the first object is not bound in a way parallel to the variable in the antecedent clause, causing a Parallelism violation. When wh-extraction of the first object in the elided clause proceeds in one fell swoop, on the one hand, Parallelism is satisfied. In this case, the first object does not make a stop at Spec, vP; therefore, an Anti-Locality violation does not arise.

(15) Analysis of (14):

Antecedent clause: $\exists f \lambda f'$ [John gave f'(child) some crayons] Elided clause: which $g \lambda g'$ [John gave g'(child) some crayons]

⁴ See also Merchant (2001) and Sato et al. (2018).

3.2. DUTCH R-PRONOUNS. The second argument for the prediction under F&L's analysis comes from Dutch R-pronouns.⁵ Table 1 presents a list of the R-pronouns in the language.⁶

	R-pronoun
Referential	er 'it'
Demonstrative	hier 'this'
	daar 'that'
Relative	waar 'that'
Interrogative	waar 'what'
Quantificational	ergens 'something'
	nergens 'nothing'
	overal 'everything'

Table 1: Dutch R-pronouns

In what follows, I first illustrate two major properties of R-pronouns, building mainly on Broekhuis's (2013) observations. This sets the stage for understanding the argument for the prediction that *wh*-movement could proceed differently in sluicing constructions than in non-sluicing contexts.

The first of the two major properties of R-pronouns concerns the structural requirements they must satisfy, specifically, the element with which they must appear and their position relative to it. Let us consider the following examples.

(16) a. Jan kijkt ernaar.

Jan looks it.at

'Jan is watching it.' (Broekhuis 2013: 293; with a slight modification of the gloss)

b. Jan was er.

Jan was there

'Jan was there.' (Broekhuis 2013: 295)

In both (16a) and (16b), the R-word *er* is used, but only the one in (16a) receives a pronominal interpretation. What is responsible for the interpretation is the presence of a preposition; in (16a), *er* appears with the preposition *naar* and is interpreted as an argument of *naar*, whereas in (16b), *er* appears independently from a preposition.

Note that in (16a) above, *naar* appears after the R-pronoun, rather than before it. On this basis, one may think that *naar* is a postposition and not a preposition. However, when *naar* appears with a nominal phrase other than an R-pronoun, as in (17), it precedes the nominal phrase.

(17) Jan kijkt naar de film.

Jan looks at the movie

'Jan is watching the movie.' (Broekhuis 2013: 293)

From (16a) and (17), it follows that when a preposition selects an R-pronoun, the R-pronoun appears to the left of the preposition. The following examples show that this pattern must hold.

(18) De kat zit op de tafel.

the cat sits on the table

'The cat is sitting on the table.' (Kluck 2015: 249)

⁵ R-pronouns are named as they are because all of them contain an /r/-phoneme.

⁶ This list has been created by drawing on the information given in Broekhuis (2013) and Kluck (2015).

(19) erop/*oper 'on it' daarop/*opdaar 'on that' waarop/*opwaar 'on what' (van Riemsdijk 1978, Kluck 2015, Law 2017)

In (18), *op* appears with a non-R nominal phrase. Its structural position relative to the nominal phrase indicates that it is a preposition. Turning to (19), we observe that the word order between the preposition and an R-pronoun must be such that the R-pronoun precedes the preposition. Following many authors (e.g., van Riemsdijk 1978, Corver 1990, Koopman 2010, Kluck 2015), I assume that the word order is derived by obligatory movement of the R-pronoun from the complement position of the preposition.⁷

In the earlier examples that contain an R-pronoun, the R-pronoun and the preposition are adjacent, with the R-pronoun preceding the preposition. For examples such as these, I assume that the PP, where the R-pronoun originates, is selected by a phonologically null phase head p and that the movement of the R-pronoun lands in the specifier of pP:

(20) Analysis for cases with an R-pronoun adjacent to its selecting preposition:

[
$$pP$$
 R-pronoun_i p [PP P t_i]] e.g., (16a), (19)

A traditional analysis (e.g., van Riemsdijk 1978, Corver 1990) would treat (16a) as involving movement from the complement of the preposition to its specifier. I do not pursue such an analysis here, as it does not take Anti-Locality into consideration. The Anti-Locality constraint proposed by Abels (2003) rules out any instance of movement that proceeds from the complement of a given head X to its specifier. The Comp-to-Spec Anti-Locality constraint does not rule out the movement illustrated in (20) because it is not "too close."

The second major property of R-pronouns has to do with the possible positions in which they may appear. We saw above that an R-pronoun must appear to the left of a preposition that selects it. In (16a) and (19), the R-pronoun is adjacent to the preposition, with the R-pronoun on the left. The R-pronoun in the examples in (21) below, on the other hand, is separated from the preposition, although it still appears to the left and is interpreted as an argument of the preposition.

- (21) a. Jan keer er zojuist naar.
 - Jan looked it just.now at
 - 'Jan looked at it just now.'
 - b. Jan keek hier/daar goed naar.
 - Jan looked this/that well at
 - 'Jan looked at this/that well'
 - c. het boek waar ik naar keek
 - the book that I at looked
 - 'the book that I looked at'
 - d. Waar keek je naar? what looked you at
 - 'What did you look at?' (Broekhuis 2013: 295; with a slight modification of the gloss)

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⁷ See Abels (2003) for a different analysis.

⁸ Koopman (2010) and Kluck (2015) would treat (16a) and (19) as involving movement to the specifier of a higher head that covertly modifies the preposition. I remain neutral regarding the presence or absence of such a head in examples like (16a) and (19).

I adopt the widely accepted analysis and assume that examples such as these involve P-stranding by an R-pronoun.

Two points should be noted regarding a construction with a wh-R-pronoun such as (21d). First, as Kluck's (2015) examples given in (22) show, in constructions of this type, both Pstranding and pied-piping are possible. Although either of the two may be chosen, P-stranding tends to be preferred (Kluck 2015: 250).

- Waar zit de kat op? (22) a. what sits the cat on
 - b. ? Waarop zit de kat? what.on sits the cat 'What is the cat sitting on?' (Kluck 2015: 250)

Second, unlike a construction with a wh-R-pronoun, one with a regular (non-R) wh-phrase does not allow P-stranding (e.g., Broekhuis 2013, Kluck 2015). In the example below, the preposition is stranded by movement of the non-R wh-phrase welke stoel, which makes the sentence ungrammatical.

(23) * Welke stoel zit de kat op? which chair sits the cat op 'Which chair is the cat sitting on?' (Kluck 2015: 250)

I have assumed that in examples such as (16a) and (19), where the R-pronoun is left-adjacent to its selecting P, the movement of the R-pronoun proceeds as shown in (20) (repeated below as (24)).

(24) Analysis for cases with an R-pronoun adjacent to its selecting preposition:

[
$$pP$$
 R-pronoun_i p [PP P t_i]] e.g., (16a), (19)

Here, the PP, which has been formed by merging the preposition and the R-pronoun, is selected by p. Movement of the R-pronoun occurs from the complement of the preposition to Spec, pP, without being ruled out by the Comp-to-Spec Anti-Locality constraint. Given the discussion thus far, there are two possibilities for how movement of the R-pronoun proceeds in examples such as (21d) and (22a), where the movement strands the preposition that selects the R-pronoun. The first possibility is that the PP, where the R-pronoun originates, is selected by p in the same way as in (24). The movement of the R-pronoun passes through Spec, pP as well as the other phase edge, namely, Spec, vP. This possibility is illustrated in (25).

(25) [CP Waar_i C ... [
$$\nu$$
P t_i ν ... [p P t_i p [PP P t_i]]]]]

The second possibility is that the PP is selected directly by V, and movement of the R-pronoun occurs, with the edge of the verbal domain (i.e., Spec, vP) as the first landing site it passes through. This possibility is illustrated in (26).

(26)
$$\begin{bmatrix} CP & Waar_i & C & \dots & \begin{bmatrix} vP & t_i & v & \dots & \begin{bmatrix} PP & P & t_i \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

(26) [CP Waar_i C ... [ν P t_i ν ... [PP P t_i]]]

In both (25) and (26), movement of the R-pronoun is not ruled out by the Comp-to-Spec Anti-Locality constraint, since it does not land in Spec, PP. Nevertheless, I assume that

movement of the R-pronoun proceeds as shown in (26) rather than in (25), taking the Minimal Structure Principle (MSP) proposed by Bošković (1997) into account:

(27) The Minimal Structure Principle (Boskovic 1997: 25):
Provided that lexical requirements of relevant elements are satisfied, if two representations have the same lexical structure and serve the same function, then the representation that has fewer projections is to be chosen as the syntactic representation serving that function.

If we consider (22a) (repeated below as (28)) as an example, then at this stage of the discussion, the string *Waar zit de kat op?* permits two possible representations, namely those in (29a) and (29b). Between the two possible representations, the MSP requires the string to have the representation in (29b) over the one in (29a), since the former has fewer projections than the latter.

- (28) Waar zit de kat op? what sits the cat on 'What is the cat sitting on?' (Kluck 2015: 250)
- (29) a. [CP Waar_i C+T+zit [TP de kat t_T [v_P t_i v [v_P t_V [p_P t_i p [PP op t_i]]]]]]] b. [CP Waar_i C+T+zit [TP de kat t_T [v_P t_i v [v_P t_V [PP op t_i]]]]]]

The stage is set for examining a case involving sluicing. Let us consider (30), drawn from Kluck (2015).

- (30) a. Bob rekent ergens op, maar ik weet niet waarop. Bob counts something on but I know not what.on 'Bob is counting on something, but I don't know what.'
 - b. *Bob rekent ergens op, maar ik weet niet waar.

 Bob counts something on but I know not what

 'Bob is counting on something, but I don't know what.' (Kluck 2015: 248)

Kluck, building on Merchant (2001), observes that unlike in (21d) or in (22a), where sluicing is not involved, in sluicing constructions, movement of the R-pronoun must pied-pipe its selecting preposition. In the case shown in (30), in particular, stranding of the preposition makes the sentence ungrammatical. In other cases with sluicing, P-stranding results in an interpretation that treats the R-word in the remnant as a locative adverbial phrase rather than as an R-pronoun (Kluck 2015).⁹

The fact that P-stranding is disallowed in sluicing constructions but permitted in non-sluicing contexts follows straightforwardly from Parallelism. That is, in the antecedent clause in (30a), the R-pronoun *ergens* has moved from the complement of P to Spec, pP. The trace in its base position is interpreted as a variable, which is locally bound by *ergens* in Spec, pP. When the movement of *waar* in the elided clause strands the preposition, the variable in its base position is not bound locally from Spec, pP because in that case, a pP projection is not present in the elided clause, and the movement does not pass through Spec, pP. Therefore, Parallelism is not satisfied. When the movement of *waar* pied-pipes the preposition, the variable in its base position is bound locally from Spec, pP, and as a result, Parallelism is satisfied.

4. Conclusion. In F&L's analysis of sluicing, whether an occurrence of *wh*-movement in a sluicing construction is ruled out is determined by whether it creates a dependency that is required to satisfy Parallelism. If these authors are on the right track, we would predict that *wh*-

⁹ See also Griffiths et al. (2021).

movement in sluicing constructions could proceed differently from *wh*-movement in non-sluicing contexts. In this paper, I have presented two arguments in support of this prediction: the first is based on English double object constructions, and the second draws on Dutch R-pronouns. Although both cases have been discussed in the literature, I have reexamined them through the lens of Parallelism. This study may open up new avenues for the investigation of related phenomena.

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