Swiping and Decomposed Merge

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Abstract: It is argued that Swiping (Merchant 2002) is derived via IP deletion to the exclusion of a remnant PP that resides more or less in-situ. This contrasts with current analyses in which the PP obligatorily moves to either the left- or right-periphery. Instead, it is argued that adjunct PPs need not fully Merge into their host phrase (Hornstein 2009). As such adjunct PPs need not move to escape IP deletion, and complement PPs, though extraposed, need not move long distance. This approach accounts for the island sensitive properties of swiping in a manner analogous to that found in Merchant 2001.

Keywords: Swiping, Sluicing, Adjunction, Merge, Constituency

1 Introduction

There is an odd construction in some Northern Germanic languages in which the canonical preposition+object order can be inverted, though only under sluicing.¹ Merchant (2002) cobbled together a few keywords from the previous sentence to form the acronym *swipiNG* (sluiced wh-word inversion with prepositions in Northern Germanic). In this paper I am going to propose a new account for the swiping phenomenon, one that treats it as a rather mundane flavor of sluicing involving little more than traditional wh-movement and IP-ellipsis. In effect, this analysis will resurrect Ross’ (1969) analysis of swiping using current theory.
This will contrast with current theories of swiping that involve PF head movement of the wh-word (Merchant) or movement of the entire prepositional phrase to a left-peripheral position followed by subextraction of the wh-word to a more left-peripheral (van Craenenbroeck 2004 and Hartman and Ai 2007) or right-peripheral position (Kim 1997 and Hasegawa 2007). First let us take a glance at the empirical landscape.

Leading the acronym is the term sluicing. I follow the analysis of Merchant 2001 (by way of Ross 1967) that sluicing involves the fully clausal architecture being built up only to be elided (contra Chung, Ladusaw, and McCloskey 1995 and Culicover and Jackendoff 2005). That is (1) is derived in part in the manner that (2) suggests.

(1) Ivan saw someone, but I don’t remember who.
(2) Ivan saw someone, but I don’t remember who, [IP Ivan saw t.]

Swiping involves a superficially similar sentence like that in (3). Again here, the wh-word has an interpretation relative to the antecedent clause, the question is: how does it get such an interpretation and what effects the noncanonical word order?

(3) Ivan was talking, but I don’t remember who to.

In this paper I am going to argue that the correct analysis for swiping differs very little from the correct analysis for sluicing. Sluicing involves movement of the wh-word to the [Spec,CP] position and so does swiping. Sluicing involves elision of the IP, so does
swiping. That is (almost) all there is to it. The analog of (2) for (3) is (4) where the prepositional phrase is adjoined to the verb phrase.² What is shown below amounts to nonconstituent deletion and as such should not be possible given current assumptions. I will show a means to delete the struckthrough string in (4) that obeys constituency by relying on Hornstein’s (2009) decomposition of Merge.

(4) Ivan was talking, but I don’t remember who, [ip Ivan was [vp [vp talking] to t₁] ]

This will have a few repercussions, one particularly important to lead with. The nature of island constraints in natural language has been a matter of substantial theoretical importance recently. If this approach is on the right track then I will show that we have further reason to suspect that island phenomena are due to PF constraints. Less grandiose than that, if this approach is on the right track then we can enjoy an analysis of swiping that covers a broader empirical swath and one that involves less conceptual machinery and theoretical elbow grease.

2 Current Analyses
In this section I will sketch the main contemporary analyses of swiping, eschewing discussion for want of space and relevance of past analyses like that found in van Riemsdijk 1978. In each I will discuss, though not exhaustively, their advantages and shortcomings.
2.1 Head Movement

Merchant 2002 proposes an account of swiping in which the wh-head moves at PF to incorporate into its selecting preposition. What is before movement as shown in (5) results in (6) after movement.

(5) PP
   P  to  DP
     who

(6) PP
   P  who_{o+to}  DP  t_i

As head movement, the above operation has some serious constraints. One being that only heads should be able to undergo this movement. And this turns out to be the case more or less. As shown below, larger wh-elements do not work in swiping configurations:

(7) *Ivan was talking, but I can’t remember which person to.

A further advantage to this approach is that it predicts that not all wh-heads will be able to undergo the operation. Take the minimal wh-head *which. This wh-head takes a complement NP and cannot excorporate from within the DP it creates upon
complementation (Baker 1995). Thus Merchant predicts correctly that which should not be able to be swiped (8).

(8) * She bought a robe for one of her nephews, but God knows which (one) for.

2.1.1 Disadvantages

There are however some disadvantages to this approach. One problem is found when more than one prepositional phrase is sluiced. This is indeed possible without swiping as shown below:³

(9) Ivan was talking, but I can’t remember to who about what.

If we round out the paradigm by flipping the swiping switch on and off a pattern emerges. Only the left-most prepositional phrase can be swiped.⁴

(10)a. Ivan was talking, but I can’t remember who to about what.
   b. *Ivan was talking, but I can’t remember who to what about.
   c. *Ivan was talking, but I can’t remember to who what about.

Even if the prepositional phrases themselves are swapped, the generalization still holds.
(11)a. Ivan was talking, but I can’t remember about what to who.
   
b. Ivan was talking, but I can’t remember what about to who.
   
c. *Ivan was talking, but I can’t remember what about who to.
   
d. *Ivan was talking, but I can’t remember about what who to.

As a PF operation, one might expect a constraint like requiring the swiped preposition to be non-final. But this is obviously not the case given (3).
Furthermore, it is possible for material to come between the swiping participants.
Merchant notes this when it comes to strings like *the hell or in the world* which attach to heads (following Pesetsky 1987) as in (12).

(12) He was talking, but God knows who the hell to.

But there is material that decidedly cannot attach to heads that can still come between the wh-word and the preposition as noted originally by van Craenenbroeck. In (13) it seems like an entire clause can invade. More egregious, in (14) two clauses can split the pair.

(13) Ivy told me that Ivan was talking, but I can’t remember who [she said] to

(14) Ivy told me that Ivan was talking, but for the life of me I can’t remember who [I thought [she said]] to
There could be a PF operation that can insert a clause parenthetically between the two. But this only prompts the question: why there?

Furthermore, it is unclear how exactly Merchant’s analysis predicts the fact that swiping only occurs under sluicing. That is, in contrast to examples like (3), examples like (15) without the sluicing are unacceptable.

(15) *Ivan was talking, but I don’t know who to Ivan was talking.

Lastly, Merchant claims that his analysis handles the fact that only those languages which permit preposition stranding allow swiping. That is, English allows both preposition stranding and swiping while German permits neither. This is presumably due to the fact that under swiping the complement to the preposition head moves and as such vacates its original position. This suggests that what prohibits preposition stranding is not due to movement that is too short as Abels 2003 claims. Rather, it seems that the prohibition is something much more surface level: Some language prohibit a gap following a preposition (German) while others do not (English) (16).

(16) German *[pp to t ]

The problem with this result is that if the prohibition on preposition stranding is as superficial as stated in (16) then a violation of it should be repaired by ellipsis. Merchant
(2001) argues at length that preposition stranding violations, whatever their true cause, are not repaired by ellipsis.

This analysis, while theoretically very interesting, requires more than is given to handle the data points offered here. In the next section I will provide additional data points that this account cannot handle in its current form.

2.2 Sub-Extraction Analyses
There is another way to get the odd facts of swiping to fall out. As opposed to post-syntactic movement, there could be movement prior to spell-out as van Craenenbroeck and Hartman and Ai propose. Under this account, the prepositional phrase moves to the left periphery. After this, the wh-element subextracts from within the moved prepositional phrase further leftward. This is sketched in the tree below.

There are various plusses to this approach. One such advantage is that it, as we will see below, neatly explains the fact that the preposition is given stress and the fact that swiping requires sluicing. That is, for the sentence in (18), the preposition must bear
stress in its prosodic phrase (the example below is from Merchant, though see Romero 1998 for an extensive discussion.).

(18)a. Ben was talking, but I don’t know...
   b. [∅ who TO]
   c. *[∅ WHO to]

Hartman et al. propose that the preposition bears a [+foc] feature that picks it out as new information. They use Merchant’s stricture on ellipsis, E-GIVENness which require that all the material in the ellipsis site be E-GIVEN, or contextually old information. This compels our [+foc] prepositional phrase upwards in the tree to a [Spec, FocP] position in the left periphery. This focus feature is checked in this new position, effecting stress on the preposition, and the wh-element moves to [Spec, CP] to check it’s [+wh] feature. Without the ellipsis, there would be no motivation for the prepositional phrase to move: It would have no E-GIVENness restriction to evade.

This confluence of features and restrictions paves the way for some core features of swiping to fall out: the preposition is stressed and not elided. And since the FocP is c-commanded by the CP in their analysis, when the wh-word moves it creates the object-preposition order.

This approach makes the prediction that swiping will not be licit when the preposition has an antecedent. This is seen in (19) from Merchant.7
We were with somebody. I forget who (*with).

The preposition with its [+foc] feature is certainly not old information, but with this explicitly mentioned with it is. This precludes the swiping preposition from hosting the feature and thus from moving out of the ellipsis site. When the preposition is omitted (elided because it has not moved) the sentence is fine.

2.2.1 Disadvantages

Despite this approach’s strong points. There are certain things it cannot handle. In this section I will discuss some.

First, this approach does not seem to be able to predict that swiping can occur along side the sluicing of other elements. Recall the type of sentences from (11) and (12) above, exemplified by (20).

Ivan was talking, but I can’t remember who to about what.

Under the sub-extraction account, the PP to who moves to FocP, but what about about what? The preposition is not stressed and thus presumably does not host a [+Foc] feature. There is then no motivation to move from within the IP and the fact that it survives ellipsis is unexplained.

Say for the sake of argument that the preposition about does have a focus feature. Were this the case, it may still have no place to go. Cinque 1999 argues that left-
peripheral Topic positions can iterate, but not Focus positions. Of these there can only be one. If this is in fact the case, then the [+Foc] feature on about will need to move out from within the IP, but it will have nowhere to go. This ought to cause the derivation to crash; a false prediction. What’s more, it is not just additional prepositional phrases that can evade deletion, but adverbs as well. Take the following discourse:

(21) Ivan talked to two people last week. I remember he talked to Ivy on Sunday, but I can’t remember who to on Monday.

The same discussion above holds for this example: there is no position for the adjunct to move to in the left-periphery.

A more serious problem is that the sort of movement proposed here violates the Condition on Extraction Domain (CED) proposed by Huang (1982) (see also Wexler and Culicover 1980) which quite clearly prohibits sub-extraction from a moved constituent. Were the CED to be dropped as a constraint, the empirical advantages that it carries with it would need to be re-analyzed. To avoid this problem such analyses would be forced to suppose a counter-cyclic operation of a remnant PP moving to [Spec, FocP] after their wh-word has moved to [Spec, CP]. This in turn would violate Chomsky’s (1995) extension condition (or really any notion of cyclicity) which requires movement operations to target roots only.

As such, sub-extraction analyses face steep theoretical obstacles in their quest to account for the facts.
2.3 Remnant Movement

There is an analysis of swiping originally posited by Kim 1997 (see also Hasegawa 2007) in which the wh-word moves followed by extraposition of the remnant PP before ellipsis. Kim presents this in the following way. First the wh-element moves from within the prepositional phrase (22).

(22) \[
\text{[vP who}_i \text{ was standing [PP by } t_i \text{ ] ]}
\]

Following this and the subsequent wh-movements to [Spec, CP], the prepositional phrase moves to a right-peripheral position above the IP (23).

(23) Ivan was standing, but I don’t know [CP who}_i \text{ [IP Lois [vP } t_i \text{ was standing } t_k \text{ ] [PP by } t_i \text{ ]}_k \text{ ] ]}

The IP is subsequently deleted and the wh-element as well as the prepositional phrase survive and do so in such a way that derives the relevant mutual ordering.

2.3.1 Disadvantages

The analysis I posit will be superficially similar to what will be argued here, yet there is a very problematic aspect of the Kim analysis that drastically undercuts its viability. In order to avoid deletion, the prepositional phrase must move outside of the IP in a
rightward fashion. This will effect a violation of the right-roof constraint (see Ross 1967, Johnson 1986, McCloskey 1999, Sabbagh, 2008).

The right-roof constraint says essentially what is found in (24) (the wording here is taken from Sabbagh).

(24) Right Roof Constraint: Rightward movement may move and right adjoin an element X to the cyclic-node in which X is merged, but no further.

Assuming that the preposition in the examples above originally merges to vP, it should not be able to move beyond that node when undergoing rightward movement, vP being a cyclic node in contemporary theory (Chomsky 2001), although Ross originally stated the constraint with the clause being the cyclic node. This should preclude it from escaping the yet higher IP phrase which is to be deleted.

The point is made more dramatically in instances in which the prepositional phrase must move much farther than we expect it to be able to given the right-roof constraint. Take for instance the example in (25). Here the preposition must have move across multiple clauses, an egregious violation of the right-roof constraint.

(25)a. Ivan said that Ivy heard that Iris was talking, but I don’t know who to.

b. Ivan said that Ivy heard that Iris was talking, but I don’t know [_{CP who, Ivan said [_{CP that Ivy heard [_{CP that Iris was talking t_{k+1} ]}_{PP to t_i}]}]}]
Further, note that noun complements cannot extrapose (26). Kim’s analysis predicts that swiping of noun complements should not be possible as it requires an unlicensed instance of extraposition. However this is not the case as seen in (27). In order to avoid deletion, the noun complement prepositional phrase would need to move beyond the IP. But as seen in (26), it cannot move around high adverb to the IP.

(26) *Ivan met a student randomly of French.
(27) Ivan met a student, but I don’t know what of.

Even prepositional phrases that can extrapose can only do so very short distances. That is, we can extrapose the PP [with Ivy] in (28) to the right of a low adverb, but not a high adverb (29).

(28) Ivan talked quickly to Ivy.
(29) *Ivan talked actually to Ivy.

Were swiping to be derived via extraposition to any position outside of the IP, we would expect the same pattern to arise. But this is not the case as seen below. Swiping can occur with around both low and high adverbs.10

(30) I know who Ivan was SOFTLY talking to, I just don’t remember who LOUDLY to.
(31) I know who Ivan was OSTENSIBLY talking to, I just don’t remember who

ACTUALLY to.

Were this analysis to allow extraposition to a closer node, it would fail to explain
how the PP avoids IP deletion. If it moved less distance a nonconstituent portion of the IP
would need to be deleted in order to derive the fact that the PP appears overtly.

This analysis has been shown to be deficient is some respects. The analysis that I
propose is very similar to this however. One important difference is that my analysis does
not require long-distance rightward extraposition. Where my account relies on
extrapostion at all, extremely local extraposition will suffice. Given a certain theory of
Merge, there will be no recourse to nonconstituent deletion.

2.4 Summary

As we have seen above, the current analyses of swiping are insufficient to account for the
data. What seems to be required is an account in which the following criteria are met:

1) There is long distance wh-movement and only one wh-element is allowed to
move (this will avoid the shortcomings in Merchant’s analysis).

2) Cyclicity is respected (avoiding the sub-extraction analyses’ shortcomings).

3) Long distance extraposition is not required (avoiding the shortcomings of
Hasegawa’s and Kim’s analyses).
In the following section I propose my analysis and show it to meet these criteria.

3 Swiping Subdued
The previous accounts, while interesting, run into serious problems. Here I will show that we can tame swiping and show that it is merely a case of traditional wh-movement plus ellipsis, or in other words sluicing.

This section will be organized in the following manner. I will first set the stage and reiterate the core idea. The rest of the section I will devote a subsection each to the features of such an analysis.

3.1 Ellipsis
Let’s take a relatively theory-neutral look at ellipsis. In English, VP-ellipsis can target the VP and delete it given sufficient preceding discourse whence the elided material can be inferred. Take a sentence like (33). It has a VP that we might want to delete and to provide the requisite discourse background, let’s assume (32) has been spoken immediately before (33).

(32)   Ivy read a newspaper on Sunday at the library...
(33)   Ivan [VP read a newspaper on Sunday at the library]

When we apply VP-ellipsis to (33), we are left with (34): a perfectly acceptable sentence provided it follows (32).
(34) ...and Ivan did \[\text{VP read a newspaper on Sunday at the library}\], too

An interesting thing about ellipsis is that it can leave adjuncts unscathed. That is, it is fine to elide a VP to the exclusion of one or both of the adjuncts (33). This can be seen below:

(35)a. ... and Ivan did \[\text{VP read a newspaper on Sunday}\] in the park
   b. ... and Ivan did \[\text{VP read a newspaper}\] on Monday in the park

An additional important aspect to notice is that if the adjuncts survive, they must contrast with what is in the antecedent sentence. The particular mechanism by which the adjuncts survive is not relevant as yet. The fact that they do is sufficient for now.

3.2 Sluicing

In addition to VP-ellipsis, there is an operation of IP-ellipsis which, as one might expect, deletes IPs. Again, this requires an antecedent clause. This time a wh-word has moved to \[\text{Spec, CP}\] and thus avoids being elided and the rest of the sentence is inferred based on the preceding clause (36).

(36) Ivan read something on Sunday at the library, I just can’t remember what, \[\text{[IP Ivan read t, on Sunday at the library]}\]
Exactly like in the VP-ellipsis cases, if we want to contrast where or when he did such a thing, we can neglect to elide one or more of the adjuncts.\(^{11}\)

\[(37)a.\] I remember what Ivan read on Sunday at the LIBRARY, I just can’t remember what\(, [_{IP} {Ivan \, read} \, _{on \, Sunday}] \) in the PARK

\[(37)b.\] I remember what Ivan read on SUNDAY at the LIBRARY, I just can’t remember what\(, [_{IP} {Ivan \, read} \, _{on \, Monday}] \) on MONDAY in the PARK

That this is possible gets us very close to predicting swiping. Suppose that instead of moving the wh-word that is the complement to the verb in the sentences above we moved something else. If we wh-move the object of an adjunct preposition we can also create fine sentences:\(^{12}\)

\[(38)\] I remember that Ivan was standing by someone, I just can’t remember who\(, [_{IP} {Ivan \, was \, standing} \, _{by} \, _{t_1}] \)

3.3 Swiping

As we saw above, we can do a few things with IP-ellipsis. One, we can elide an IP to the exclusion of an adjunct. Two we can wh-move from within an adjunct and then apply IP-ellipsis and include that adjunct in the ellipsis. What if we were to exclude the adjunct
from the ellipsis as well as extract a wh-word out of it. It would look like the sentence in (39) and without the brackets and elided material (40).

(39) I remember that Ivan was standing, I just can’t remember who$_{1}$ [IP Ivan was standing] [ADJUNCT by $t_{1}$]

(40) I remember that Ivan was standing, I just can’t remember who by.

The above is our swiping case, derived solely from ellipsis and wh-movement. In the following sections I will discuss how this accounts for various characteristics of swiping.$^{13}$

3.4 Only in Sluicing
Swiping appears only in sluicing for a very straightforward reason. Only through wh-movement can the object of a preposition come before it. In this sense, swiping differs from (41) only in that ellipsis applies in swiping.

(41) I remember that Ivan was standing, I just can’t remember who Ivan was standing by.

To get the two adjacent again, the IP is elided to the exclusion of the adjunct, which we have seen is independently possible.
3.5 Intervening Material

As we noted above, material can intervene between the wh-word and its preposition. This falls out trivially in this account. The wh-word can move successive cyclically up through indeterminately many clauses before its final resting place. As such we can predict that a lower IP can be elided, leaving the upper clause unaffected. In other words, (42) can be described as (43).\textsuperscript{14}

(42) Ivy told me that Ivan was playing, but I can’t remember who she said with.

(43) Ivy said that Ivan was playing, but I can’t remember $[\text{CP} \text{ who; she said } [\text{CP t_i } [\text{IP Ivan was playing}]] [\text{ADJUNCT with t_i } ]$.

3.6 Stress on the Preposition

In the discussion of ellipsis in general, we have seen that adjuncts can avoid deletion if they contrast with the antecedent in some way. If swiping crucially involves adjuncts not being deleted, then it should behave the same way. And it does.\textsuperscript{15}

In the sentence below, the preposition contrasts with the antecedent in that the first clause states that talking was remembered while the swiping clause tosses in the stressed caveat that exactly who the addressee was is unknown.

(44) Ivan was talking, but I don’t know who \{$Ellipsis$\} TO.
The contrast between the antecedent clause and the elided clause is analogous to the sluicing case in (45) or the traditional VP-ellipsis case in (46).

(45) I know who Ivan saw on SUNDAY, I just can’t remember who \textit{Ellipsis} on MONDAY.

(46) Ivan saw Ivy, and Igor did \textit{Ellipsis} too

The stress on the preposition in swiping is due to the same pressures that require the \textit{too} in regular ellipsis or stressed adjuncts in non-swiping sluicing sentences. It overtly hosts the contrast to the antecedent sentence. This does not require the coding of stress into features that drive movement as in the sub-extraction analysis. I consider this to be an advantage to the current approach.

3.7 Multiple Sluiced Prepositions

As we saw with regular ellipsis, more than one adjunct can be left over after deletion. There is nothing requiring this adjunct \textit{not} to contain a wh-word. Especially in English sluicing, we might expect a wh-word to be left behind. With multiple wh-words in non-sllicing examples this is usually the case (47).

As such, we can have a sentence like (48) in which one adjunct has been extracted out of and the other one either maintains its wh-word, or never had one to begin with.

(48)a. Ivan was talking, I just can’t remember who [IP Ivan was talking] to about what
   b. Ivan was talking to IVY on SUNDAY, I just can’t remember who [IP Ivan was talking] to on MONDAY

3.8 Restrictions on Multiple Sluiced Prepositions
Repeated as (49) below, we saw above that only the left-most prepositional phrase can undergo swiping.

(49)a. Ivan was talking, but I can’t remember who to about what.
   b. *Ivan was talking, but I can’t remember who to what about.
   c. *Ivan was talking, but I can’t remember to who what about.

Now since English only allows one wh-word to overtly move to [Spec, CP], we can rule out (49b). There is simply no motivation for the object of about to move. It also prevents the obviously terrible (50).

(50)a. *Ivan was talking, I just can’t remember who what to about.
   b. *Ivan was talking, I just can’t remember what who to about.
The sentence in (49c) is ruled out because the object of *about* only partially moved (though it is unclear where to). Its wh-feature was presumably never checked.

All told, these restrictions are easily predicted when we assume a normal clausal architecture and vanilla wh-movement to be at the root of swiping.

4 Extensions
In this section I will explore the repercussions of the approach posited above. The current analysis has cross-linguistic import and could prove interesting in terms of what it suggests about island phenomena. Additionally, it has some ostensible problems that I will argue are in fact not.

4.1 Island Effects
Fox and Lasnik (1999) among others argue that islands are a PF phenomenon and they use argumentation concerning sluicing. Without rehashing in detail what they argue, suffice it so say that so long as an island is not pronounced, there is no violation. Slightly more concretely, the example below is a grammatical sentence because the island harboring the trace of the moved wh-element is elided (51), though without the ellipsis, the sentence is bad (52).

(51) Ivan made the claim that Ivy saw someone, I just can’t remember who,[IP Ivan made [Island the claim that Ivy saw t ]]


*(52) Ivan made the claim that Ivy saw someone, I just can’t remember who, Ivan made
the claim that Ivy saw t.*

In other words, it is not narrow syntax that (derivationally or representationally) determines island violations. Rather it is the PF component.

If swiping works the way I argue it does, then we could construct a sentence in which there is sluicing that leaves a trace within an island yet outside ellipsis. If the trace of the element that moved outside the island is not elided and the sentence is bad, then it would provide further support to the idea the islands are PF phenomenon. Or vice versa: if islands are a PF phenomenon and swiping sentences obey island constraints, then the current analysis is the only one that predicts this. In the sub-extraction account, the elided trace of the PP should no more cause island violations than wh-traces do in sluicing.

As we can see below, swiping obeys island conditions. The sentence in (53) can only have the reading in which the speaker cannot remember who Ivan made the claim to. It crucially *cannot* have the interpretation in which the speaker cannot remember who Ivan claimed that Ivy was talking to.*16

(53) Ivan made the claim that Ivy was talking, I just can’t remember who to.

4.2 Pied Piping

To my ear, pied piping generally sounds stilted and of marginal acceptability. I am suspicious of anyone for whom this is not the case. That said, this argument makes a
prediction. The extent to which one accepts pied piping in sentences without ellipsis is the same extent that they will accept pronoun+object order in sluicing. If one prefers non-pied piped prepositions, they should prefer swiping. This is because the only difference between the two is deletion.  

For example, I find the following unacceptable in (54) and the sluiced version just as bad (55)

(54) *Ivan was talking, I just can’t remember about what he was talking.

(55) *Ivan was talking, I just can’t remember about what.

Swipe the sentence and it is fine, as is the un-elided version:

(56)a. Ivan was talking, I just can’t remember what about.

b. Ivan was talking, I just can’t remember what he was talking about.

4.3 How to Exclude Adjuncts

As noted before, it is a simple empirical fact that ellipsis can target XPs to the exclusion of adjuncts. But how can this happen?

Hornstein (2009) presents the following conundrum. According to Bare Phrase Structure (BPS) (Chomsky 1995), there can only be one maximal projection per head. Prior to BPS, this was not the case and in particular adjunction extended the tree but did
not change the bar level information. As seen in (57), an adjunct could adjoin to a VP and the label dominating that would in turn be another VP.

(57) Ivan \([_{VP} \text{saw Ivy}] \text{ on Saturday}]\)

This was advantageous. Certain operations only worked on maximal projections, say VP-ellipsis. In the above structure VP-ellipsis could operate on the inner (59a) or outer (59b) VP.

(58) Iris saw Ivy on Sunday...

(59a) ...and Ivan did on Saturday.

b. ...and Ivan did, too.

But with BPS, we can no longer capture these facts. What is considered a maximal projection is now relative and not inherent to any node. As such, the structure in (57) only has one maximal projection, the outer VP. We no longer have a means of operating on the VP to the exclusion of the adjunct:\textsuperscript{18}

(60) Ivan \([_{VP} \text{ saw Ivy}] \text{ on Saturday}]\)

4.3.1 Decomposed Merge
To solve this dilemma, Hornstein proposes a decomposition of the Merge operation. Merge, as construed in Chomsky 1995 takes two syntactic elements and combines them, projecting one of them as the label of said combination (61).

\[
(61) \quad \text{Merge}(x,y) \rightarrow \{x,\{x,y\}\}
\]

Hornstein instead posits that the above operation should be broken down into two operations: Concatenate (62) and Label (63). The Concatenate operation takes two atomic syntactic units and combines them into a complex of atomic units. Label makes said complex atomic itself by choosing one of the elements of the Concatenation operation to serve as the label of complex:

\[
(62) \quad \text{Concatenate}(x,y) \rightarrow \{x,y\}
\]
\[
(63) \quad \text{Label}(x,\{x,y\}) \rightarrow \{x,\{x,y\}\}
\]

According to the theory, normally both of these operations are carried-out, but with adjunction this is not the case. Adjuncts, not being necessary to the derivation, do not necessarily have to undergo Label.

This decomposition allows for an elegant account of the differential behavior of adverbial modification. When an adverb Concatenates with a verb and does not project (64), the verb+adverb complex is, in Hornstein’s words, “invisible” to the rest of the
structure. So when an operation like VP-deletion targets a VP with a Concatenated adverb, the VP deletes leaving the adverb behind (65).

\[
\text{VP} \quad \overline{\text{A}} \quad \text{run} \quad \text{quickly}
\]

(65) Ivan ran slowly and Ivy did quickly.

When an adverb is both Concatenated and Labeled into the structure (66), VP-deletion applies to the adverb as well (67).

\[
\text{VP} \\
V \quad A \\
\text{run} \quad \text{quickly}
\]

(66) Ivan ran slowly and Ivy did too.

4.3.2 Application to Swiping

We can straightforwardly apply the above discussion to adjunct PPs attaching to the VP. So long as they do not Label, the ellipsis will leave them unscathed. Take “∧” to signify Concatenation without Label, we can analyze swiping more accurately as (68) below.

(68) Ivan was talking, I just can’t remember who, [IP Ivan was talking] [PP to t]
This has an advantage over the superficially similar Kim account. In his account, the prepositional phrase rightward moves to some extra-IP position, violating the right roof constraint. In this analysis no movement outside of the vP is required. Instead, the preposition avoids IP deletion by not fully integrating into the structure.

This account is essentially a recapitulation of Ross’ (1969) account that avoids both the stipulative nature of it as well as its ungainly recourse to deletion of non-constituents, a problem Ross himself acknowledges. His transformational analysis is given below. The string in (69) has its elements in slots 2 (X) and 4 (Y) deleted to the exclusion of the element in slot 3 (P).

(69) \[
\begin{align*}
[\text{CP} \ X \ P] \ \{+\text{wh}\} \ [\text{IP} \ - \ P \ - \ Y] \ldots \rightarrow [\text{CP} \ X \ P] \ \{+\text{wh}\} \ [\text{IP} \ - \ P \ - \ _] \\
1 & 2 & 3 & 4 & 1 & 2 & 3 & 4
\end{align*}
\]

The analysis present here derives the fact that the P is excluded from this deletion by allowing X and Y to form a constituent to the exclusion of P.

4.3.3 Swiping Complements

Throughout this paper I have been using complement prepositional phrases in my examples even though I end up claiming that only adjuncts can evade deletion in sluicing (and thus swiping). For many of the above sentences I have used the verb talk which under most diagnostics of complementhood, takes about and to as complements. How then to reconcile this?
The analysis presented here does not require that these complements be adjuncts at every stage in the derivation. Rather, they must be adjunct at at least one stage. As such, I propose that the complement prepositional phrase in (70) extraposes and adjoins (without Labeling) to vP before deletion occurs. That is, (70) is analyzed as (71).

(70) Ivan was talking, but I don’t know who to.
(71) Ivan was talking but I don’t know who, Ivan was \([vP \text{ talking } t_k] \cap [PP \text{ to } t_i]_k\)

The movement from within the preposition phrase takes place before this extraposition (to [Spec, vP]) and as such we violate neither the CED nor extension. Further, the rightward movement of the prepositional phrase is short enough to still obey the right roof constraint, contrary to Kim.

Instances where swiping occurs with noun complement prepositional phrase work in a similar fashion. For the example below, the noun complement PP need only extrapose to adjoin to the phrase that it is a complement to for this analysis to work. In fact, this is exactly the analysis proposed by Akmajian (1975). This allows us to avoid deleting the PP without resorting to long distance rightward movement:

(72) Ivan met a student, but I don’t know what of.
(73) Ivan met a student, but I don’t know what, Ivan met a \([NP \text{ student } t_k ] [PP \text{ of } t_i]_k\)

5 Conclusion
In this paper I proposed a novel analysis of swiping that does not succumb to the shortcomings of its predecessors. Second, I presented some heretofore unanalyzed empirical data that are captured by the present account. Third, I have found further support for the idea that islands are PF phenomena, something of substantial conceptual interest. And last, as a strictly theoretical point, I have suggested a further, natural use for Hornstein’s decomposition of merge.

6 References


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\(^1\)In particular, swiping is a subcase of sprouting (Chung, Ladusaw, and McCloskey 1995). That is, the sluiced element is interpreted in a position that does not exist in the antecedent clause. As such, sprouting will show effects similar to those of sprouting: island sensitivity, a requirement on new information being sluiced, etc.
It should be noted that the preposition phrase to who functions according to all
test like a complement to the verb talk. Considering it an adjunct in swiping cases will be
explained and supported later.

The introspective reader might notice that non-swiped prepositional phrases
sound worse. I claim that this is due to the fact that pied piped prepositional phrases like
these sound less acceptable independently of swiping. I will discuss this more later.

These sentence are ones that I came up with without having yet read Richards’
(1997) discussions of them. Our judgments differ slightly in basically irrelevant respects
(He thinks (9) and (11a) are bad). I stand by my judgments but as will eventually be
discussed below, my theory predicts differences in judgment in exactly these cases.

In van Craenenbroeck’s account it is the first of two CPs that the prepositional
phrase moves to while in Hartman et al.’s account it is a Foc(us)P that it moves to. This
distinction is not relevant for the discussion here.

They stipulate that [+foc] features can only be assigned to elements within an E-GIVEN
phrase in order to capture that swiping only occurs under sluicing. This gets the
facts to turn out right, but I’m not sure how much it is independently warranted.

It should be noted that the sentence in (19) is for some speakers not too degraded
when the preposition is pronounced. In this paper I assume the analysis of Hartman an Ai
which reduces the effect to discourse restrictions and adopt their account for the variable
judgments of such sentences.
Less easy to account for though is the differences in acceptability between (19) which is marginal with the preposition unelided and (i) which is atrocious with the preposition unelided:

(i) *Ivan was talking to a man, but I don’t know which to

Hartman and Ai would attribute the unacceptability of (19) and (i) to the same source, but as such there is no way to account for the disparity in acceptability.

8 We could rescue the above sentence by allowing another FocP by fiat. The PP about what would move to that position and check its feature, escaping ellipsis. As such we would expect that if this PP had an antecedent in the discourse, the sentence would be bad. And this seems to be the case (and is the case in sprouting generally):

(i) *Ivan was talking about something, but I can’t remember who to about what

Though for this to work, it would require this undesirable stipulation and I discount it as a real possibility.

9 Another option would be to follow Nakao, Hajime, and Yoshida’s (2006) relatively stipulative assertion that the prepositional phrase moves without leaving a trace. Movement from an element that, in effect, has not moved should not induce CED effects.
These examples may not be perfectly acceptable, but that is beside the point. The point is that there is not the same difference in acceptability between them as there is between the non-swiping examples.

These sentences sound slightly odd, but I contend they are grammatical. They are more acceptable when the surviving adjunct is phonologically light. Take for example (i) which is clearer than the ones given above.

(i) I know what John ate quickly, but I don’t know what slowly.

I also assume that the adjuncts adjoin to the verb phrase, but for now this detail is not crucial to anything.

This would seem to be a CED violation, but for whatever reason, wh-movement from this sort of prepositional phrase is fine in unelided sentences as well:

(i) Who was Ivan standing by?

I will leave out discussion of the fact that mostly just minimal wh-words can be swiped. I believe Hartman and Ai to be the final word on this. Their analysis works equally well with the present one. Focus is what forces their prepositional phrase and its attendant new information to the left periphery and it is what forces the prepositional phrase in this account to avoid deletion. The restriction on ‘complex’ wh-word stems from the fact that they be d-linked (Pesetsky 1987) and as such cannot be new
information, though the PP movement requires that they be. This clash effectively prohibits complex wh-words in swiping.

14It is very interesting to note that opting not to elide the intermediate clauses is only licit in swiping. Under traditional sluicing, the sentence is bad:

(i) *Ivan said that Ivan was playing with someone, but I can’t remember who she said.

The above sentence may be ruled out based on something like Merchant’s MaxElide concept which would force elision of the intermediate clause. If this is the case, then for whatever reason, MaxElide would need to be violable under swiping for some reason.

15This also predicts the prohibition on any non-contrasting antecedent for the un-elided preposition. To contrast with something, the two things need to be sufficiently different and as such probably will not be able to serve as antecedents for one another.

16There is a confounding factor here. As was first noted by Rosen (1976) swiping only occurs when the prepositional phrase has no antecedent in the discourse. That is, in example (i) there is a prepositional phrase in the antecedent sentence and swiping is not licensed.

(i) *Ivan was talking to someone, but I don’t know who to.

Sluicing sentences in which what is sluiced has no antecedent (sprouting sentences) have been independently shown to be subject to island constraints (see Chung,
Ladusaw, and McCloskey 1995). In upcoming work I will further the analysis to account for sprouting’s island sensitivity as well.

There is another fact that is interesting to note, but unexplained in this account. For those who find swiping without sprouting to be acceptable, swiping seems to no longer be subject to island effects. That is, the sentence below is acceptable to them given the relevant interpretation.

(ii) Ivan made the claim that Ivy was talking to someone, I just can’t remember who to.

One should note that this effect disappears when more than one preposition+wh-word is sluiced. The rightward PP is acceptable in preposition-object order even for people who disprefer pied piping. This suggests that Richards’ (1997) account of multiple sluicing might not be correct. Under his analysis, a sentence like in which two prepositional phrases are sluiced, they have both moved to a [Spec, CP] position. As such we expect that the marginal acceptability of pied piping should remain. That it does not suggests that another analysis of multiple sluicing is correct. One like that of Lasnik (forthcoming) might be preferable.

See Hornstein 2009 for arguments against Chomsky’s (1995) reformulation of adjunction which could in principle avoid this problem.
19 Precursors to this theory can be found in Chametzky 2000 and Uriagereka 2002 and the theory is further discussed in Hornstein and Nunes 2008. See Larson 2010 for an extension to coordination.

20 Take the dashed line to indicate Concatenation with Labeling.