Multiple *wh*-movement and extraction from VPE sites[*]

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1   Introduction

It has proven difficult to understand what drives apparent *wh*-movement in languages with multiple sluicing that lack multiple *wh*-movement. Many authors, including Abels & Dayal (2016), Gärtner (2002), and Richards (2001), propose that the appearance of multiple *wh*-remnants in these languages is the result of an interaction of covert *wh*-chains with ellipsis: Ellipsis of the tail of a covert *wh*-movement chain forces pronunciation of a higher link in the chain, deriving what I will refer to as *exceptional wh*-movement. Although this makes for an elegant analysis of multiple sluicing, I argue the assumptions underlying the analysis appear to make unwelcome predictions about *wh*-movement out of verb phrase ellipsis sites. Verb phrase ellipsis (VPE) should motivate exceptional multiple *wh*-movement, but it does not appear to do so.

I begin in Section 2 by discussing how covert movement approaches derive multiple sluicing in languages without multiple *wh*-movement and why such approaches are appealing theoretically. In Section 3, I show that these approaches predict that VPE should drive exceptional *wh*-movement when VPE sites contain the tail of a covert *wh*-chain, contrary to fact. Following this, in Section 4 I describe multiple *wh*-extraction out of VPE sites in Romanian, showing that overt multiple *wh*-movement is possible in VPE contexts. In Section 5, I sketch how we might account for the differences between sluicing and VPE in a derivational approach to ellipsis, though mysteries remain.

2   Multiple *wh*-sluicing in languages without overt multiple *wh*-movement

In this section, I briefly the describe the standard theoretical approach to sluicing, followed by a description of multiple sluicing and why it is a problem for the standard approach. I then describe Richards's (2001) approach to multiple sluing in languages without multiple *wh*-movement.

2.1 Sluicing basics

Sluicing is an elliptical operation that deletes clauses out of which *wh*-question movement has occurred. Sluices look like stranded *wh*-phrases without accompanying clauses, yet they have the interpretation of full sentences: The second conjunct in (1) is interpreted as 'I don't know which book the students are going to buy', despite the fact that *which book* is the only component of the question that appears.

(1)   The students are going to buy a book, but I don't know <u>which book$_i$</u>.

The standard analysis is that the remnant *wh*-phrase moves out of a clause which undergoes ellipsis. Following Merchant (2001), the head that licenses *wh*-movement also licenses deletion of its complement. Since the *wh*-element is copied to a position outside of the ellipsis site, it escapes ellipsis, while the material remaining in the ellipsis site is left unpronounced, as schematized in (2):[1]

(2)   I don't know [$_{CP}$ which book$_i^2$ [$_{TP}$ ~~they are going to buy~~ which book$_i^1$]].

2.2 Multiple *wh*-movement and multiple sluicing

English does not permit overt multiple *wh*-movement to the left periphery. In embedded *wh*-clauses where two *wh*-phrases occur, only one *wh*-phrase undergoes movement (3). Movement of multiple *wh*-elements is ungrammatical (4).

(3)   Mary donated a different book to each charity, but I don't know which book$_i$ she donated to which charity$_k$.

(4)   *Mary donated a different book to each charity, but I don't know which book$_i$ to which charity$_k$ she donated.

Bolinger (1978) shows that, despite this, sluices can apparently have multiple remnants, as in (5). *multiple sluicing* is well-attested in languages that typically ban multiple *wh*-movement.

(5)   Mary donated a different book to each charity, but I can't remember <u>which book$_i$</u> <u>to which charity$_k$</u>.

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[1] It is necessary to keep track different kinds of unpronounced material, and I use various typographical conventions to do so throughout. I use grey text to indicate an unpronounced copy and ~~strikethrough~~ to indicate ellipsis. Focus is indicated with SMALL CAPS when relevant.

It is also important to keep track of copies of the same element. I will use a subscript letter to indicate membership in a chain. A superscript numeral indicates which copy an element is. These are conventions I adopt for convenience; I do not assume these indices are linguistically real. Richards's (2001) strong and weak positions will be indicated with an S or a W superscript on a bracket, respectively. Remnants in examples will be underlined.

This poses a challenge to the standard analysis of sluicing sketched in (2). Since multiple overt *wh*-movement is not generally permitted in English, it is unclear how multiple *wh*-phrases escape the ellipsis site; i.e., (5) seems to require as a base structure the ungrammatical (4). To preserve the standard analysis of sluicing, we must find a way to allow multiple *wh*-fronting while restricting it to elliptical contexts.

2.3   Solution: exceptional movement

One approach to multiple sluicing is to propose that ellipsis drives exceptional movement of *wh*-elements to the left periphery. This relies on two assumptions:

  i. Movement of additional *wh*-elements happens covertly.

  ii. Ellipsis precludes pronunciation of the tail copies of these *wh*-chains.

Richards (2001: 137–140), with these assumptions, proposes that multiple sluicing, as in (5), occurs when pronunciation of a lower copy is blocked by an independent application of clausal ellipsis: If ellipsis targets a phrase that contains the tail of a covert *wh*-chain, a higher link in the *wh*-element must be pronounced.

Richards (2001), assuming the copy theory of movement, argues that PF must receive unambiguous instructions regarding which element in a chain to pronounce. The difference between overt and covert movement is based on whether movement is triggered to a strong or weak position. A strong position requires a link in a chain be pronounced in that position, but a weak position does not, so movement to a weak position will usually be delayed until after spell out.[2]

Let us examine how this works in English. Assume that only the higher of the two *wh*-landing sites is a strong position; the lower positions are weak. The higher *wh*-element will be pronounced in the left periphery, whereas lower *wh*-elements are pronounced *in situ*:

(6)   but I don't know $[^S_{CP}$ who^2_i $[^W$ what^2_k $[_{TP}$ who^1_i will buy what$^1_k]$]].

Because deleting TP blocks the lower copy of *what* from being pronounced, it cannot be pronounced *in situ*. Under Richards's view, this requires exceptional narrow-syntactic movement to a weak position: Ellipsis forces overt movement of the second *wh*-word, allowing for exceptional pronunciation in a weak position.

(7)   but I don't know $[^S_{CP}$ who^2_i $[^W$ what^2_k $[_{TP}$ ~~who^1_i will buy what^1_k~~]]].

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2 There are several similar approaches in the literature; see, e.g., Gärtner 2002 and Abels & Dayal 2016. For simplicity, I will generally restrict my discussion to Richards 2001.

This solution is elegant because it explains why multiple sluicing is available in languages that allow overt movement of only a single *wh*-element without appealing to stipulative construction-specific movements or non-constituent deletions. The claim is that every *wh*-element undergoes movement and only when ellipsis forces lower copies to go unpronounced can higher copies be pronounced. Multiple *wh*-fronting in non-elliptical contexts is otherwise ruled out because there is only one strong position in the left periphery triggering overt movement.

2.4   Richards' analysis also explains pseudogapping

Richards also argues that ellipsis motivates exceptional movement out of VPE sites. Pseudogapping is a phenomenon where a *v*P-internal element (the remnant) appears stranded next to an auxiliary verb while the rest of the *v*P appears to be missing:

(8)   John could pull you out of a plane, like he did <u>his brother</u>.

A common analysis of this phenomenon involves movement of the remnant to a position outside *v*P and subsequent ellipsis of the *v*P. Richards (2001: 137) assumes that in English this movement is typically covert. Only when VPE deletes *v*P can an object be pronounced in this position, as in (9). This ties the fact that pronunciation in this position is limited to cases where pronunciation in the base position is independently blocked.

(9)   like he did $[^{\mathrm{W}}_{\mathrm{Agr_OP}}$ his brother^2_k [pull ~~his brother^1_k~~ out of a plane]].

Psuedogapping will be important going forward, since we will be turning our attention to away from sluicing and toward VPE. Since pseudogapping appears to be a case where VPE drives exceptional movement, we will want to use it as a point of comparison in our discussion of whether VPE can drive exceptional *wh*-movement.

2.5   Summary

Richards (2001) proposes that ellipsis prevents the tails of covert *wh*-chains from being pronounced, resulting in the exceptional pronunciation of higher links. This explains several phenomena, including multiple sluicing in languages without multiple (overt) *wh*-movement and movement of pseudogapping remnants.[3] As I explain in the following section, however, the approach overgenerates, predicting that there should be more movement out of ellipsis sites than is actually attested.

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3 Richards also argues that this analysis can explain sluicing in languages without any overt *wh*-movement, like Japanese. However, Japanese has been argued to lack true sluicing; see Merchant 1998.

3   The VPE problem

The issue I will raise with ellipsis-driven exceptional movement is that it predicts there should be more exceptional movement than is actually attested. Specifically, I look at predicted patterns of multiple *wh*-fronting in clauses containing VPE. Before this, I discuss the conditions on *wh*-extraction out of VPE sites, since there are certain restrictions on when this is possible that one must control for.

3.1   Extraction from VPE sites

Wh-movement out of VPE sites is well established, but in order for it to be licit, some new or focused material must occur between the extracted *wh*-element and the ellipsis site (Schuyler 2001):

(10)   They said they WOULD buy a puppy, but I don't know [$_{CP}^{S}$ which one$_i$ they SHOULD [$_{vP}$ ~~buy which one$_i$~~]].

(11)   MARY should buy that puppy, but I don't know [$_{CP}^{S}$ which one$_i$ BILL should [$_{vP}$ ~~buy which one$_i$~~]].

Without a focused element between the *wh*-element and the ellipsis site, clausal ellipsis (i.e., sluicing) is required, an effect known as MAX-ELIDE (Merchant 2008):

(12)   Mary should buy a puppy, but I don't know which one (*? she should).

Remember going forward that the movement in these cases is driven by a strong feature in the left periphery, occurring regardless of whether ellipsis happens: The reason sluicing is preferred in (12) is not because VPE fails to motivate movement in these cases.[4] Introducing a focused element between the *wh*-element and the ellipsis site blocks the MaxElide effect, The parallelism between the possible sluice and its antecedent is destroyed and there is no antecedent for a sluice.

3.2   Multiple *wh*-extraction

Critically, languages without multiple *wh*-movement do not allow exceptional multiple *wh*-fronting if at least one of the *wh*-words originates in the VPE site:

(13)   *Each student must buy something, but I don't know [$_{CP}^{S}$ who$_i$ [^{W} what$_k$ [$_{TP}$ who$_i$ SHOULD [$_{vP}$ ~~buy what$_k$~~]]]].

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4 It is widely believed that movement somehow obligates ellipsis of the larger constituent due to the interaction of the LF-identity requirement on ellipsis (Sag 1976) and the way that movement introduces variables into LF representations.

(14) *Mary said she wants to give one of these books to each of her students, but I can't tell her [$_{CP}^{S}$ which book$_i$ [^{W} to which student$_k$ [$_{TP}$ she SHOULD [$_{vP}$ ~~give~~ ~~which book$_i$ to which student$_k$~~]]].

This appears problematic, given the approach to multiple sluicing introduced above. Examples (13) and (14) have covert *wh*-chains with tails inside *v*P. Eliding *v*P should render the tails of the *wh*-chains unpronounceable, and higher links should be pronounced. As (13) shows, exceptional *wh*-movement to the left periphery out of a VPE site appears to be blocked if the strong *wh*-position is occupied.[5]

3.3 *Wh*-pseudogapping and intermediate positions

Klaus Abels (p.c., Oct. 2016) suggests that cases like (13) and (14) are ruled out because the second *wh*-element may be stranded in a lower weak position, similar to what Richards (2001) proposes for pseudogapping. Because copies can be pronounced in this lower position, they are not pronounced in a higher weak position. However, native speaker judgments do not appear to support this conjecture.

Recall from Section 2.4 that pseudogapping involves movement of a VP-internal element to a *v*P-external position. If *wh*-elements also pass through this position, VPE would not necessarily force pronunciation of the highest link in the covert *wh*-chain.[6] Instead, VPE might cause pronunciation of the *wh*-element in the position of pseudogapping remnants. This predicts that examples like (15) and (16) should be acceptable, where one *wh*-element moves to the left periphery, and a second is stranded below a modal or auxiliary verb (I will refer to this configuration as wh-*pseudogapping*):

(15) *?Each student must buy something, but I don't know [$_{CP}^{S}$ who$_i^2$ [^{W} what$_k^3$ [$_{TP}$ who$_i^1$ SHOULD [$_{Agr_OP}^{W}$ what$_k^2$ [$_{vP}$ ~~buy~~ ~~what$_k^1$~~]]]].

(16) *?Mary said she was going to give one of these books to each of her students, but I don't know [$_{CP}^{S}$ which book$_i^2$ [^{W} to which student$_k^3$ [$_{TP}$ she HAS [$_{AgrP}^{W}$ to which student$_k^2$ [$_{vP}$ ~~given~~ ~~which book$_i^1$ to which student$_k^1$~~].

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5 Alternatively, example (13) might be ruled out if there is no *wh*-movement in subject *wh*-questions at all (Rizzi 1996): If *who* remains in SpecTP, there is no valid landing site for *what* below SpecTP. This, however, cannot explain (14), since the subject is not a *wh*-element.

6 Nothing in Richards's (2001) approach or those following it make it clear that a lower weak position should be preferred to a higher one just in case the base position becomes unavailable, only that each element should only be pronounced once. Other approaches to multiple copies, like Nunes 2004, suggest that higher copies should in fact be preferred.

As best as I can determine, English speakers find examples such as these ungrammatical.[7] Nearly every speaker I have consulted finds (15) unacceptable;[8] in more detailed conversations, speakers have reported finding these cases marginally ungrammatical at best, preferring unelided equivalents or suggesting alternate examples with multiple sluices if appropriate.[9]

3.4 Generalizations

It seems clausal ellipsis can generally drive exceptional movement (see also Weir 2014). The bad cases above involve VPE rather than clausal ellipsis. We might therefore propose the hypothesis in (17):

(17)   VPE cannot drive overt movement to weak positions.

While some cases seem to allow exceptional movement out of VPE sites, such as pseudogapping, multiple *wh*-extraction is impossible. It has been argued that ellipsis can and does drive movement out of VPE sites: In LaCara 2016, I argue that ellipsis drives movement of focused subjects out of *v*P in inverting *as*-parentheticals, and Sailor & Thoms (2014) argue that certain apparent cases of non-constituent coordination may be VPE with movement out of the ellipsis site. That said, Lasnik (1999) actually argues that pseudogapping involves overt movement, and in previous work (LaCara 2015) I argue that movement of subjects in *as*-parentheticals occurs overtly. If these cases involve overt movement, then it may well be the case that only clausal ellipsis drives exceptional movement, and (17) can be maintained.

4   Multiple overt *wh*-movement out of VPE sites is possible

Before trying to understand why (17) might be true, it is worth investigating a second possibility: Perhaps VPE is, in general, incompatible with multiple *wh*-movement. Evidence from Romanian, however, does not support this hypothesis. Romanian, unlike English, allows multiple *wh*-movement (Rudin 1988):

(18)   <u>Cine</u> <u>cui</u>   <u>ce</u> ziceai [că i   -a promois]?
         who whom.DAT what said.2SG that him.DAT has promised

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7 One respondent to an informal Facebook survey said she hated (15) 'so much' and threatened to unfriend any respondent who found it acceptable.

8 Examples where the second remnant is a PP as in (16) are judged marginally better, similar to what is reported in cases of multiple sluicing (Lasnik 2014).

9 Pseudogapping has a somewhat 'marginal character' (Lasnik 1999: 150–151), and multiple sluicing is often reported to be only marginally acceptable (Lasnik 2014). If they are derived in the same way, as Richards (2001) proposes, (15)–(16) should be no worse than pseudogapping or multiple sluicing. I have yet to undertake a careful comparison of the phenomena, but my impression thus far is that speakers who accept multiple sluicing and pseudogapping reject these examples.

'Who did you say promised what to whom?'   (Rudin 1988: 453, (9a))

VPE in Romanian is more restricted than in English, but Nicolae (2016) shows that it does occur after the modal *putea*, 'can, could'. One way to be sure that this is ellipsis is that it is possible to move *wh*-elements out of the ellipsis site:[10]

(19) Nu știu   pe cine   vrei   să   invit,   însă eu
      not know.1SG DOM whom want.2SG SUBJ invite.SUBJ.1SG but I

      știu   pe *cine* pot   Δ.
      know.1SG DOM whom can.1SG

      'I don't know who you want me to invite, but I do know who I can.'
                                                    (Nicolae 2016: 627, (32a))

These examples tell us two important things. First, there is VPE in Romanian, and second, it is possible to move *wh*-elements out of VPE sites. Given that Romanian allows multiple overt *wh*-movement, it is unsurprising that multiple *wh*-movement out of a VPE sites is also possible.[11]

(20) Stiu   ca vrei   sa   dau fiecare carte unui   student
      know.1SG that want.2SG SUBJ give each   book one-DAT student

      diferit,   dar nu stiu   [ce   carte] [carui   student] pot.
      different, but not know.1SG what book   which-DAT student can.1SG

      'I know you want me to give each book to a different student, but I don't know what book I can (give) to which student.'

(21) ?M-ai   intrebat cine trebuia sa   zica secretul carui   student,
      me.CL-have asked who must   SUBJ tell secret.the which-DAT student,

      si   [cine] [carui   student] nu putea.
      and who   which-DAT student   not can.3SG

      'You asked me who had to tell the secret to which student, and (also) who couldn't (tell the secret) to which student.'[12]

This shows multiple *wh*-extraction from VPE sites is possible in at least one language. Thus, it cannot be the case the VPE blocks multiple *wh*-movement generally.

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10 Nicolae specifically controls for MaxElide in these examples. Notice that there is no matching modal in the antecedent.

11 My thanks to Rodica Ivan for judgments and discussion of the Romanian data.

12 Rodica prefered it if the second *wh*-element followed the verb in this example. This may have to do with the first *wh*-element being a subject.

5 Why should sluicing behave differently from VPE?

We are left with a bit of a mystery: If we accept hypothesis (17), why should clausal ellipsis drive exceptional movement but not VPE? I propose that we may find an account of this by appealing to the relative timing of exceptional movement and VPE, though the precise details of how this would work are admittedly still sketchy.

5.1 Derivational timing

Whatever is going on here, we don't want to completely block multiple extractions out of VPE sites in English in general. It must be possible to do both A-movement and A$'$-movement out of a single ellipsis site:

(22)   I know what Mary was given, but I don't know [$_{CP}^{S}$ what$_k^2$ [$_{TP}^{S}$ John$_i^2$ was [given ~~John$_i^1$ what$_k^1$~~]]].

Additionally, we need to make sure that exceptional movement is permissive enough to allow multiple sluicing. Thus, we need to find a principled way of limiting the exceptional *wh*-extraction possibilities out of VPE sites without restricting overt movements or precluding multiple sluicing.

Numerous recent approaches to ellipsis attempt to limit the amount of material that can be extracted from an ellipsis site by proposing that ellipsis is actually a narrow syntactic operation that can interact with movement operations (Harwood 2013, Bošković 2014, Aelbrecht 2010, among others). Rather than being a simple case of PF deletion, ellipsis occurs as soon as a licensing head merges, freezing elided phrases for further syntactic operations. Such an approach might be able to block exceptional movement if, as Weir (2014) proposes, exceptional movement occurs later than overt movement. As sketched below, once ellipsis occurs, movement of the second *wh*-element would become impossible:

Step 1: *Overt movement of first* wh-*element*:
  [$_{vP}$ *wh*$_1$ [$_{VP}$ *wh*$_1$ *wh*$_2$]]

Step 2: *Merge T^0, elide VP*:
  [$_{TP}$ T$_{[E]}^0$ [$_{vP}$ *wh*$_1$ [$_{VP}$ ~~*wh*$_1$ *wh*$_2$~~]]

Step 3: *Merge C^0, Overt* wh-*movement to SpecCP, exceptional movement blocked*:
  [$_{CP}$ *wh*$_1$ *wh*$_2$ C^0 [$_{TP}$ T$_{[E]}^0$ [$_{vP}$ *wh*$_1$ [$_{VP}$ ~~*wh*$_1$ *wh*$_2$~~]]

Sluicing, however, is triggered late enough that wh_2 is still available for movement. Since the verb phrase is not frozen by ellipsis at Step 2, it remains possible to extract wh_2 when C^0 is merged:

Step 1 *Overt movement of first* wh-*element*:
$$[_{vP} \ wh_1 \ [_{VP} \ wh_1 \ wh_2 \ ] \ ]$$

Step 2 *Merge T^0; no ellipsis*:
$$[_{TP} \ T^0 \ [_{vP} \ wh_1 \ [_{VP} \ wh_1 \ wh_2 \ ] \ ]$$

Step 3 *Merge C^0,* wh-*movement to SpecCP*:[13]
$$[_{CP} \ wh_1 \ wh_2 \ C^0 \ [_{TP} \ T^0 \ [_{vP} \ wh_1 \ [_{VP} \ wh_1 \ wh_2 \ ] \ ]$$

This is why understanding what happens in languages with multiple *wh*-movement is so important. If overt multiple *wh*-movement happens all at the same time while exceptional movement is delayed, we might be able to explain the difference between sluicing and VPE with regard to exceptional movement.

5.2 Implications

If this proposal is on the right track, then assumptions about how and when this exceptional movement actually occurs will start to matter; neither the conception in Richards 2001 nor Abels & Dayal 2016 seems to be the right one. In Richards's view, this is exceptional overt movement to weak position normally associated with covert movement. It's not clear that this happens *later*, so much as it has to have happened to satisfy the constraint that PF receive unambiguous instructions about which copies to pronounce. Under the assumptions adopted by Abels & Dayal (2016), overt and covert movement happen at the same time, the difference between them being which copies are pronounced. A derivational timing account does not obviously work under this assumption.

Furthermore, assumptions about phases will matter, too, especially to explain Step 2 above: We need to understand what forces wh_1 out of the ellipsis domain in Step 1, and why wh_2 should remain inside it. Furthermore, why wouldn't ellipsis at Step 2 force exceptional movement of wh_2?[14]

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13 Assume that ellipsis and movement can happen simultaneously (Aelbrecht 2010).

14 Note that since SpecTP is not a A′-position in English, there will be no covert copy of the *wh*-element there, so VPE will not force pronunciation of a *wh*-element in SpecTP. We need to explain, then, why wh_2 cannot move to Spec$v$P, though perhaps the relative acceptability of *wh*-pseudogapping examples suggests that this is marginally possible.

To echo the words of Johnson (2001), the size restriction on this paper rescues me from improving my hypothesis. However, I hope to have shown that VPE behaves differently from sluicing with regard to exceptional movement. If we assume that cases like pseudogapping actually involve overt (rather than covert) movement to the middle field, we can claim that VPE does not drive exceptional movement, as proposed in (17), and a derivational timing account may allow us to explain this difference.

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