Squibs and Discussion

Successive-Cyclic Movement and Island Repair: The Difference between Sluicing and VP-Ellipsis

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It is well known that in sluicing constructions *wh*-dependencies can cross certain projections that are otherwise barriers to movement (Ross 1969, Chomsky 1972). This fact would follow under the assumption that the relevant barriers are somehow deactivated when phonologically deleted (''island repair''). The problem, however, is that another form of phonological deletion (VP-ellipsis; VPE) seems to be impossible in certain contexts where sluicing allows for island repair (Chung, Ladusaw, and McCloskey 1995, Merchant 2001).

Nevertheless, we argue against the conclusion that island repair is a special property of sluicing. The argument is based on two observations. First, the difference between sluicing and VPE seems too broad to warrant the conclusion that island repair is the distinguishing factor (Lasnik 2001). Second, the conclusion is directly refuted by other VPE environments where island repair is possible (Kennedy and Merchant 2000; Fox, in preparation). The argument leaves us with a puzzle that we attempt to resolve while still maintaining the null hypothesis that VPE and sluicing involve the same operation of deletion, differing only in the size of the deleted constituent. Our proposed resolution capitalizes on a special property of the relevant sluicing contexts—namely, the presence of an indefinite NP in the antecedent clause in a position parallel to that of a trace in the elided clause. We argue that given the parallelism conditions on ellipsis, this fact prevents the *wh*-phrase in the elided clause from undergoing successive-cyclic movement. The remaining option (one-fell-swoop movement) requires the deletion of all barriers, including those that would otherwise be circumvented via an intermediate landing site. Such deletion occurs in sluicing but not in VPE, which targets a smaller constituent.

1 An Apparent Repair Paradox

To the best of our knowledge, Ross (1969) was the first to observe island repair under sluicing. Ross gives the following examples (mark-

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ing the sluicing versions with ??, though many speakers find them perfect or virtually so):

(1) I believe the claim that he bit someone, but they don't know who (*I believe the claim that he bit).
(Complex NP Constraint, noun complement)

(2) Irv and someone were dancing together, but I don't know who (*Irv and were dancing together).
(Coordinate Structure Constraint)

(3) She kissed a man who bit one of my friends, but Tom doesn't realize which one of my friends (*she kissed a man who bit).
(Complex NP Constraint, relative clause)

(4) That he'll hire someone is possible, but I won't divulge who (*that he'll hire is possible).
(Sentential Subject Constraint)

Chomsky (1972) presents a similar example, involving amelioration of extraction out of a noun complement (quite a weak violation for many speakers, but marked with * by Chomsky).

(5) a. (*)I don't know which children he has plans to send to college.
b. He has plans to send some of his children to college, but I don't know which ones.

Much more recently Chung, Ladusaw, and McCloskey (1995) (CLM) give the following examples, among several others, to make the same point:

(6) Sandy was trying to work out which students would be able to solve a certain problem, but she wouldn't tell us which one (?*she was trying to work out which students would be able to solve).

(7) That certain countries would vote against the resolution has been widely reported, but I'm not sure which ones (*that *t* would vote against the resolution has been widely reported).

Merchant (2001) provides an extensive survey of such cases and presents scores of further examples, including such ''Left Branch Condition'' phenomena as the following:

(8) He wants a detailed list, but I don't know how detailed (*he wants a *t* list).

The phenomenon is clearly quite pervasive.

Kennedy and Merchant (2000) show that other ellipsis processes also sometimes repair island violations. For example, in comparative deletion constructions VPE seems to alleviate Left Branch Condition effects.

(9) *[How interesting] did Brio write [a *t* novel]?

(10) a. Pico wrote a more interesting novel than Brio did.
b. Pico wrote a more interesting novel than [*Op* Brio did ~~write a *t* novel~~].

Additional evidence that island repair is also a property of VPE comes from a contrast discussed in Fox, in preparation. Consider the dialogues in (11) and (12), focusing on the utterance produced by speaker B.

(11) A: We should hire John since he knows how much every item in this store costs.
B: I think that's not necessary. ?I know how much every item costs that John does ~~knows how much *t* costs~~.

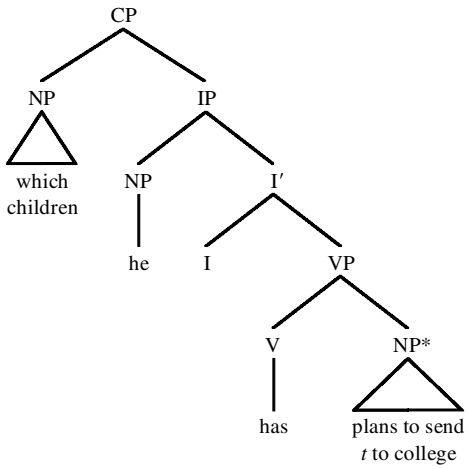
(12) A: We should hire John since he knows how much every item in this store costs.
B: I think that's not necessary. *I know how much every item costs that John knows how much *t* costs.

The relevant sentence in (11) is somewhat marginal. The reason for this marginality is that antecedent-contained-deletion (ACD) resolution relies on long-distance Quantifier Raising (QR) and extraposition (see Fox 2002, in preparation, for details). But this is not particularly important from the current perspective. The important point is that the sentence is much better than expected if VPE could not repair islands. This is evident when we compare the sentence with its counterpart in (12) where the elided VP is pronounced. The latter is totally unacceptable, an expected consequence of subject extraction across a *wh*-island. (11), although slightly marginal, does not feel like a similar island violation, thereby suggesting that VPE is capable of island repair.[1]

Thus, actual island repair by ellipsis seems to exist. Here is one (rather old) account. Chomsky (1972) suggests that * (# in his presentation) is assigned to an island when it is crossed by a movement operation. An output condition forbidding * in surface structures accounts for the deviance of standard island violations. Chomsky's analysis is illustrated in representation (13) (put in more modern phrase structure terms).

[1] As will be discussed shortly, it is much easier to come up with examples of island repair that involve sluicing than with similar examples that involve VPE. The reason for this is that in sluicing an elided clause contains a trace, while a trace is not obligatory in the antecedent. In VPE, as we will show, a trace in the elided constituent requires a trace in the antecedent. Examples of island repair with VPE are therefore bound to be very limited. (10) and (11) are ACD examples in which the antecedent VP contains a trace of QR (QR of a DP in (11) and of a degree quantifier in (10)). A test for island repair is available in these cases only because the conditions on QR are more liberal than the conditions on overt movement (see Fox 2000, in preparation).

(13) I don't know



If a later operation (sluicing in this case) deletes a category containing the *-marked item, the derivation is salvaged.[2]

CLM present evidence that VPE does not remedy islands. They give the following example of extraction out of an adjunct, observing that VPE does not improve it:

(14) *What did you leave before they started playing *t*?

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

CLM suggest that a fundamental difference between sluicing and VPE might be at work here, the former involving LF copying and the latter PF deletion. But that fails to address the puzzle that VPE sometimes (like sluicing) does repair island violations but other times (unlike sluicing) does not. A potential solution might capitalize on Chomsky's (1972) *-deletion outlined above. In Kennedy and Merchant's example (10), the relevant island is presumably the NP that Op has moved out of (or some projection right above NP, as Kennedy and Merchant argue). But note that the island is no longer present in surface form. The same is true of Fox's (11). On the other hand, in CLM's example (15) the island is the adjunct phrase headed by *before* (or the *wh*-island), and that phrase remains in surface form. On Chomsky's (1972) account of the remediation of islands by sluicing, that difference is significant, because on that account the * would be eliminated in (10), but would remain in (15).

[2] A tempting alternative explanation at this point might be to deny that the ''repaired'' sentences involve movement at all. Instead, they might involve a resumptive strategy, the resumptive pronoun being eliminated along with the rest of the IP or VP by ellipsis. However, Merchant (2001:128–146, 198–199) presents very strong arguments against this approach as a general solution.

However, such a solution initially does not seem general enough. In rejecting Chomsky's analysis, Merchant (2001) presents cases where the island is eliminated by VPE, but the example is nonetheless unacceptable, even though the corresponding sluicing example is fine. For example, while (17) involves apparent repair by sluicing, in (18) VPE does not ameliorate the deviance.

(16) *They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) [$_{IP}$ they want to hire someone who speaks *t*].

(17) They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) [$_{IP}$ ~~they want to hire someone who speaks *t*~~].

(18) *They want to hire someone who speaks a Balkan language, but I don't know which (Balkan language) they do [$_{VP}$ ~~want to hire someone who speaks *t*~~].

Note that in (18), as in (17), the island that is crossed (the relative clause and/or the NP containing it) does not show up at the end of the derivation. If the marker of deviance is on the island, and if the island is deleted, Merchant reasons that there is no obvious way to capture the difference in status between (17) and (18). Partly for this reason, Merchant winds up arguing that relative clauses are LF islands, rather than PF islands, so their violation cannot be repaired by a PF process (ellipsis = deletion). He then gives a completely different account of the apparent repair in (17), one where the derivation doesn't involve an island violation in the first place. However, it turns out that even for Merchant's PF islands, the problematic state of affairs still obtains. First, consider complementizer-trace effects, as in the following two examples, which are fine with sluicing but severely degraded without ellipsis:

(19) It appears that a certain senator will resign, but which senator [~~it appears that *t* will resign~~] is still a secret.
(adapted from Merchant 2001:185)

(20) Sally asked if somebody was going to fail Syntax One, but I can't remember who [~~Sally asked if *t* was going to fail Syntax One~~].
(CLM, cited in Merchant 2001:185)

Next there are ''derived positions,'' including topicalized phrases and subjects. (21) and (22) illustrate sluicing repairing a topic island violation and (23) illustrates sluicing repairing a subject island violation.

(21) *Which Marx brother did she say that [a biography of ____], she refused to read?

(22) A: A biography of one of the Marx brothers, she refused to read.
B: Which one?
(Merchant 2001:185)

(23) She said that a biography of one of the Marx brothers is going to be published this year, but I don't remember which [~~she said that a biography of *t* is going to be published this year~~].
(adapted from Merchant 2001:185)

But contrary to expectation, we again find apparent failure of repair with VPE.

(24) *It appears that a certain senator will resign, but which senator it does [~~appear that *t* will resign~~] is still a secret.

(25) *Sally asked if somebody was going to fail Syntax One, but I can't remember who she did [~~ask if *t* was going to fail Syntax One~~].

(26) *She said that a biography of one of the Marx brothers is going to be published this year, but I don't remember which she did [~~say that a biography of *t* is going to be published this year~~].

Stranger still, parallel ''failure of repair'' obtains even when there is no violation in the first place. Extraction out of an embedded clause is typically fine and sluicing is just as good, but VPE is bad.

(27) They said they heard about a Balkan language, but I don't know which Balkan language (they said they heard about).

(28) *They said they heard about a Balkan language, but I don't know which Balkan language they did.

Similarly for extraction out of an object NP.

(29) They heard a lecture about a Balkan language, but I don't know which Balkan language (they heard a lecture about).

(30) *They heard a lecture about a Balkan language, but I don't know which Balkan language they did.

Thus, there is indeed a difference between sluicing and VPE, but not one that directly implicates island repair. In the next section we will suggest an account of this difference.

2 A Possible Solution

As just demonstrated, the contrast between VPE and sluicing shows up whether or not the elided constituent contains an island, and it therefore cannot be attributed directly to a distinction in the island repair potential of the two constructions. Furthermore, there are cases where both constructions allow for island repair. It therefore seems reasonable to assume that all forms of deletion can repair islands.[3]

[3] One potential exception is Merchant's observation that the ban on preposition stranding (attested in many languages) is generally not circumvented by sluicing.

But what accounts for the fact that VPE is impossible in many environments where sluicing is very natural? Our answer to this question will rely on island repair, but in a somewhat indirect way. We argue that in the relevant environments the parallelism conditions on deletion (Parallelism) make intermediate landing sites unavailable. Avoiding the intermediate sites (one-fell-swoop movement) brings about many island violations and is therefore also not a viable option, unless the islands are repaired by deletion. Such repair is possible in sluicing since every intermediate projection is deleted. By contrast, in VPE a smaller constituent is deleted, leaving one (or more) of the islands pronounced and consequently unrepaired.

In a run-of-the-mill sluicing environment a trace in the elided constituent occupies a position parallel to that of an indefinite in the antecedent clause.

(31) Fred said that I talked to *a certain girl,* but I don't know which girl [~~Fred said that I talked to *t*~~].

The obvious question is how this difference (between a trace and an indefinite) is licensed by Parallelism. We assume, following the insight of CLM, that the indefinite must be bound by existential closure in a way parallel to the way the *wh*-dependency is bound in the sluiced clause. There are various ways of instantiating this idea. For concreteness, we follow Reinhart (1997) in assuming that both the *wh*-phrase and the indefinite NP partake in a dependency that involves quantification over choice functions.

(32) ∃f choice function [Fred said that I talked to f(girl)], but I don't know which g choice function ⟨Fred said that I talked to g(girl)⟩

Parallelism is satisfied since the variables in the antecedent and the elided clause are bound from parallel positions. (See Fiengo and May 1994.)

The next question is how the rules of grammar license a structure such as (32). CLM claim that sluicing is a postsyntactic operation, which copies the antecedent clause *Fred said that I talked to f(girl)* into an empty position following the *wh*-phrase. Their motivation for the copying operation is twofold: (a) it yields an indefinite in the sluiced clause where one would otherwise expect a trace, and (b) it explains the island insensitivity of sluicing. We suggest that a special copying operation for sluicing can be dispensed with. The fact that something similar to an indefinite turns up in the position of the trace can be viewed as a natural consequence of the copy theory of movement (as we illustrate below). The island insensitivity, on the other hand, does not motivate a sluicing-specific explanation. Rather, it falls under a fairly broad generalization about deletion, which we tried to characterize in the previous section (island repair).

More specifically, we suggest that the word *which* is interpreted as an existential quantifier over choice functions (type $\langle\langle cf,t\rangle\, t\rangle$, where *cf* stands for $\langle et,e\rangle$). Such an existential quantifier cannot be interpreted

adjacent to the common noun *girl,* a position that requires a choice function. This type mismatch is resolved in the standard way—namely, by movement of the quantifier leaving a variable ranging over the individuals that are quantified over (in our particular case, choice functions). Furthermore, we assume that the movement involves pied-piping, which is resolved (as is standardly assumed) by reconstruction—that is, by deleting the pied-piped material at the head of the chain and interpreting it at the tail.

(33) which g ~~girl~~ λg′ [Fred said that I talked to g′(girl)]

In the antecedent clause a parallel structure is derived by existential closure over choice functions (see, e.g., Reinhart 1997, Kratzer 1997).

(34) ∃f λf′ [Fred said that I talked to f′(girl)]

The final structure obeys Parallelism since the elided clause is identical to the antecedent clause (modulo variable names) and since the variables in the two clauses are bound from parallel positions.

Notice that *wh*-movement in (32) involves no intermediate landing sites. There is a reason for this. If intermediate landing sites were present, Parallelism would not be satisfied; the clause containing deletion, represented in (35), would have an intermediate trace that is absent from the antecedent clause, (34) (since no movement is involved in the derivation of the latter).

(35) which g ~~girl~~ λg′ [Fred [g′ λg″ said g″ λg‴ that I talked to g‴(girl)]]

Subsequently, the variables in the two clauses would not be bound from parallel positions and Parallelism would not be satisfied.[4]

So, Parallelism determines that *wh*-movement in sluicing cannot be successive cyclic. This seems to be problematic under the assumption that successive-cyclic movement is required by considerations of locality. But as discussed in the previous section, considerations of locality are nullified under deletion (island repair). We can therefore maintain the standard assumption that intermediate landing sites are escape hatches that allow *wh*-movement to circumvent what would otherwise be an island.[5] Avoiding an intermediate landing site would consequently yield an island violation. However, the violation can also be circumvented if the island is deleted, and this is what we propose happens in sluicing constructions.

[4] We assume (contra Lasnik and Saito (1984)) that intermediate landing sites are always present in the final representation. For arguments in favor of this assumption see Fox 2000 and Nissenbaum 2000. Also it is crucial for our account that intermediate landing sites will be relevant for Parallelism. This is the case if one adopts Fiengo and May's (1994) definition of Parallelism or the slightly more relaxed condition defended in Fox 1999, 2000:chap. 4.

[5] Roughly following Chomsky (1986), we assume that there are a multitude of intermediate maximal projections that are potential barriers.

This proposal provides an explanation of the otherwise puzzling difference between VPE and sluicing. VPE involves deletion of a smaller constituent than the clause that is elided in sluicing. For the sake of concreteness, let's assume that VPE deletes VP and leaves Tense and Aspect pronounced. If a representation approximately like (36) were to be derived with VPE instead of sluicing, there would be two maximal projections that are not deleted and yet do not host an intermediate landing site.

(36) which g ~~girl~~ λg′ [$_{TP}$ Fred T [$_{AspP}$ did ⟨$_{VP}$ say that I talked to g′(girl)⟩]]

The unacceptability of VPE follows if we assume that (at least) one of the two maximal projections is an island that must be circumvented by an escape hatch or by deletion.[6] Since the islands are not deleted, the escape hatch is required and a violation of Parallelism is unavoidable.[7]

Notice that this account of the contrast between VPE and sluicing relies crucially on the fact that movement takes place in the elided constituent but not in the antecedent constituent. Parallelism requires avoiding intermediate landing sites, and IP-deletion (sluicing) is consequently necessary. An immediate prediction of the account is that if the antecedent clause is replaced with a clause that involves movement, both VPE and sluicing should be possible. This seems to be the case, as illustrated by the fact that the contrast in (37) is largely absent in (38).[8]

(37) a. I know that John said that Mary read a certain book, but I don't know which one.
b. *I know that John said that Mary read a certain book, but I don't know which one he did.

(38) a. I know which book John said that Mary read, but YOU don't know which one.
b. ??I know which book John said that Mary read, but YOU don't know which one he did.

[6] Evidence for landing sites between the subject and the VP can be found in Fox 2000 and Nissenbaum 2000.

[7] Notice that Parallelism (via the requirement of identical dependencies) has consequences for the structure of material that is outside the elided constituent. If we eliminate the Spec,CP trace in (35) and elide the VP as in (i), the structure would still not be parallel to (34).

(i) which g ~~girl~~ λg′ [Fred [g′ λg″ did ⟨say that I talked to g″(girl)⟩]]

This follows from Fiengo and May's (1994) definition of Parallelism as well as Fox's (2000:chap. 4).

It is also worth noting that a structure such as (i) involves one-fell-swoop movement followed by successive-cyclic movement and therefore might violate a possible generalization of the ban on improper movement. Metaphorically, once you get on the express train, you can't switch to the local short of the destination.

[8] Some speakers find (38) marginal, but no one we questioned finds it as bad as (37b). See footnote 10.

3 Remaining Issues

In the constructions we have investigated in this squib, the NP in the antecedent clause that corresponds to the *wh*-trace of the sluiced clause (the corresponding NP) is an indefinite NP. We assumed that this indefinite remains in situ at LF and serves as an argument of a choice function variable bound by existential closure. Parallelism is satisfied, we argued, if *wh*-movement in the sluiced clause takes place in one fell swoop. Such movement, in turn, is possible as long as every barrier (i.e., every projection that requires intermediate landing sites) is deleted, something that occurs in sluicing but not in VPE.

We will finish with a few words about a slightly different environment in which sluicing is licensed. Consider the following examples from Merchant, in press:

(39) a. He likes ABBY, but I don't know who else ⟨he likes⟩.
b. He said he likes ABBY, but I don't know who else ⟨he said he likes⟩.

Here the corresponding NP is not an indefinite. How, then, is sluicing licensed? We tentatively adopt Merchant's suggestion that focused constituents can undergo LF movement (as originally suggested by Chomsky (1976) and more recently defended by Krifka (1996)). If the landing site of this movement corresponds to that of *wh*-movement, the LF constructions will satisfy Parallelism.

(40) a. $[\text{ABBY}]_1$ [he likes t_1], but I don't know [who else]$_1$ ⟨he likes t_1⟩.
b. $[\text{ABBY}]_1$ [he said he likes t_1], but I don't know [who else]$_1$ ⟨he said he likes t_1⟩.

This, if correct, slightly complicates the situation. To tell whether Parallelism is licensed in a sluicing construction, we must determine the LF structure of the antecedent clause. If the corresponding NP undergoes LF movement, sluicing should be possible. This reasoning is supported, as Merchant (in press) points out, by the observation that sluicing with a nonindefinite NP correlate is island sensitive.

(41) *The detective ruled out the possibility that Fred killed ABBY, but I don't know who else ⟨the detective ruled out the possibility that Fred killed⟩.

The observation is explained if we assume that focus movement obeys island constraints. (See Krifka 1996 for arguments to this effect.) Since the corresponding NP is not an indefinite that might be bound by existential closure, the only way for Parallelism to be satisfied is by focus movement, which is ruled out by the intervening island.

Merchant points out a potentially problematic consequence of his suggestion in the context of our proposal. Specifically, he points out that in environments that allow the corresponding NP to undergo LF movement, one might expect the distinction between VPE and sluicing to disappear. (The expectation is justified if LF movement involves

successive-cyclic steps that correspond to the steps of *wh*-movement.) Merchant argues that the expectation is false, on the basis of the contrast between the sentences in (39) and those in (42).

(42) a. ?He likes ABBY, but I don't know who else he does ⟨likes⟩.
b. ??He said he likes ABBY, but I don't know who else he did ⟨he said he likes⟩.

While this contrast is, indeed, problematic, we observe that the ellipsis cases in (42) are not as bad as comparable cases in which the corresponding NP does not undergo LF movement, such as (37).[9] To our ears they are similar in status to (38b), and therefore we suggest that these examples should be accounted for by a condition independent of the one responsible for the main fact we have discussed.[10]

4 Conclusion

In this squib we have argued that various contrasts between sluicing and VPE can be made to follow from the (undeniable) fact that sluicing targets a bigger constituent. The argument is based on various theoretical assumptions that have been made in the literature, and if successful, it provides further evidence in favor of these assumptions: that deletion (in all its forms) is capable of island repair, that successive-cyclic movement is a consequence of considerations of locality, and that some position between VP and IP is an intermediate landing site. Furthermore, if our proposal is correct, there is no need for a taxonomy of ellipsis operations of the sort advocated by CLM, and the taxonomy of islands argued for by Merchant can be eliminated or at least substantially reduced.

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[9] We assume that indefinites, which are (or at least can be) interpreted as choice function arguments, do not undergo LF movement out of tensed clauses. This assumption might follow from the economy condition argued for in Fox 2000. See Legate 1999 for an argument that choice function indefinites do undergo short-distance QR. Legate's conclusions are consistent with those of Fox 2000. Taken together, these proposals would block nonlocal QR.

[10] Merchant's (in press) MAX-ELIDE might well be the culprit.

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