Multiple Sluicing

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(1)   Not surprisingly, in languages with multiple wh-fronting (such as Bulgarian and Serbo-Croatian), multiple Sluicing (Sluicing with multiple survivors) is possible:

(2)   Njakoj   vidja njakogo, no ne znam   koj kogo ~~[vidja]~~
        someone   saw someone but not I-know who whom (saw)   Bulgarian
                                                                      Richards (1997)

(3)   Neko   je vidio nekog, ali ne znam   ko   koga   ~~[je vidio]~~
        someone is   seen someone but not I-know who whom (is seen)   Serbo-Croatian
                                                                      Stjepanovic (2003)

(4)   Surprisingly, at least some multiple Sluicing is allowed in at least some **non**- multiple wh-fronting languages:

(5)   I know that in each instance one of the girls got something from one of the boys.
        ?But which from which   Bolinger (1978)

(6)   I know that in each instance one of the girls got something from one of the boys.
        ?But they didn't tell me which from which   Nishigauchi (1998)

Compare:

(7)   *They didn't tell me which from which got something

A further example:

(8)   ?One of the students spoke to one of the professors, but I don't know which to which

(9)   *One of the students spoke to one of the professors, but I don't know which to which
        spoke

(10)   Richards (1997), Richards (2001), assuming the copy theory of movement, offers an intriguing account of this surprising possibility, involving a sort of repair by ellipsis, of these apparent multiple sluicing constructions:

(11)   PF must receive unambiguous instructions about which part of a chain to pronounce (and only a single member of the chain will be pronounced).

(12)   A strong feature instructs PF to pronounce the copy in a chain in which it is in a feature-checking relation.

(13)   Suppose a weak feature overtly attracts an item. The resulting chain would then contain two members, with no instruction about which to pronounce. The derivation crashes at PF.

(14)   When the attracting feature is strong, PF is instructed to pronounce the head of the chain.

(15)   As Richards notes, his approach does not absolutely bar overt weak feature driven movement. Suppose a weak feature drives movement out of what will become an ellipsis site. In this case PF only has to consider a single position for pronunciation (the head of the chain), since nothing in the ellipsis site will be pronounced.

(16) This is the basis of Richards's analysis of apparent multiple sluicing in languages lacking overt multiple wh-movement. Richards gives the following example, adapted from Bolinger (1978):

(17) I know that in each instance one of the girls got something from one of the boys. But they didn't tell me which from which.

(18) I know that in each instance one of the girls got something from one of the boys. *But they didn't tell me which from which got.

(19) In a language like English, some of the features on C^0 driving wh-movement are weak. (18) is correctly ruled out, as the representation will contain two copies of the second wh-phrase, with no instruction as to which to pronounce.

(20) When the IP is elided, as in (17), the wh-chain will be legitimate, containing only a single candidate for pronunciation.

(21) Merchant (2001) offers a rather similar account: Procrastinate is a 'local' requirement, encoded as a feature of a trace. Moving overtly when covert movement would have been possible leaves this feature on the trace (perhaps ultimately resulting in a PF crash). If the IP containing the trace is deleted, the defective feature is no longer present at the PF interface, so the violation is repaired.

(22) Nishigauchi (1998), on the other hand, concludes that these are not really multiple sluicing: While the first wh-phrase is in Spec of CP, the second occupies some other position.

(23) "One striking fact about multiple sluices in the languages above is that they tend not to be separated by a tensed clause boundary..."   Merchant (2001)

(24) Which one of the professors did the students say that Mary spoke to

(25) The students said that Mary spoke to one of the professors, but I can't remember which professor ~~the students said that Mary spoke to~~

(26) *One of the students said that Mary spoke to one of the professors, but I don't know which student to which professor

(27) As mentioned earlier, in languages with multiple wh-fronting (such as Bulgarian), multiple sluicing (sluicing with multiple survivors) is rather freely possible, as seen in the following two examples from Richards (1997), and Stjepanovic (2003) respectively:

(28) Njakoj   vidja njakogo, no ne znam   koj kogo   ~~vidja~~
      someone   saw someone but not I-know who whom (saw)   [Bulgarian]

(29) Neko   je vidio nekog, ali ne znam   ko   koga   ~~je vidio~~
      someone is   seen someone but not I-know who whom (is seen)   [Serbo-Croatian]

(30) The important question now is whether such multiple sluicing is possible across a clause boundary. I do not yet have a great deal of data, but what I do have is suggestive. One of my two Serbo-Croatian informants reports that the following example is quite good

(though perhaps a shade short of perfect):

(31) a. Neko   misli da je Ivan nesto   pojeo.
         someone thinks that is Ivan something ate
         'Someone thinks that Ivan ate something.'
       b. ?Pitam se ko   sta.
           Ask   self who what
           'I wonder who what.'

(32) However, the second informant rejects the example. Perhaps significantly, these judgments
      track their judgments for multiple wh-movement <u>without</u> sluicing. The first speaker
      accepts the following example while the second rejects it:

(33)   Ko sta   misli   da je Petar pojeo?
       who what thinks that is Petar eaten
       'Who thinks that Petar ate what?'

Another constraint:

(15)   John was talking, but I don't know about what
                                      what about   'Swiping' Merchant (2002); Ross
(1969) (16)   John was talking, but I don't know to who
                                      who to
(17)   John was talking, but I don't know to who about what
(18)   who to about what
(19)   *   who to what about
(20)   *   to who what about   cf. Richards (1997)

Yet another requirement on the English construction: The second <u>wh</u> strongly prefers to be a PP:

(34)   ?Someone talked about something, but I can't remember who about what
(35)   ?*Someone saw something, but I can't remember who what

(36)   ?Mary showed something to someone, but I don't know exactly what to whom
(37)   ?*Mary showed someone something, but I don't know exactly who what

(38)   The combination of boundedness and preference for a PP is reminiscent of what we find in
       rightwards focus movement.

(39)   "Right Roof Constraint"
       Any rule whose structural index is of the form ... A Y B, and whose structural change
       specifies that A be adjoined to the right of B, is upward bounded.   Ross (1967)

(40)   The superior acceptability of PP over DP as the second wh-remnant is also similar to what
       is found with rightwards movement.

(41)   a. Some students met yesterday with the professors
       b.*Some students met yesterday the professors

(42)   'Heaviness' is a factor in extraposibility, as discussed by Ross (1967) and Fiengo (1980) among many others. However, that requirement seems limited to situations where it is a DP that tries to extrapose:

(43)   a. *Mary saw yesterday Harry
        b. Mary saw yesterday her old friend Harry
        c. Mary saw yesterday Harry Hetherington
(44)   Mary spoke yesterday to him

(45)   Multiple sluicing tracks extraposition quite well:

(46)   a. Who was talking yesterday to who
        b.   Someone was talking (yesterday) to someone, but I don't know who to who
(47)   a. ?*Who bought yesterday what
        b. ?*Someone bought something, but I don't know who what
(48)   a. Which linguist criticized yesterday which paper about sluicing
        b. ?Some linguist criticized (yesterday) some paper about sluicing, but I don't know which linguist which paper about sluicing

(49)   Finally, rightwards DP movement is well known not to affect the object of a preopsition, as first discussed by Ross (1967):
(50)   *A linguist spoke about yesterday a paper on sluicing
Compare:
(51)   A linguist criticized yesterday a paper on sluicing

(52)   The second <u>wh</u> in multiple sluicing seems subject to the same constraint, though the effect is perhaps less pronounced:
(53)   Some linguist spoke about some paper on sluicing, but I don't know which linguist ?*(about) which paper on sluicing

There are certain exemptions to the Right Roof Constraint. One involves control clauses:
(54)   ?Mary wanted to go until yesterday to the public lecture
(55)   Significantly, apparent multiple sluicing tracks both the constraint and the exemption quite well:
(56)   *Some of the students wanted John to go to some of the lectures, but I'm not sure which to which
(57)   ?Some of the students wanted to go to some of the lectures, but I'm not sure which to which
Another involves clauses with bound pronoun subjects:
(58)   The absent-minded professor$_i$ will say that {he$_i$/*Lucy}'s working, if you press him, on a new molecular compound for flubber   [Jason Merchant, personal communication]
(59)   ?Each professor$_i$ said he$_i$ was working on a different one of these topics, but I can't remember which on which one   [Jason Merchant, personal communication]
(60)   A certain boy$_i$ said he$_i$ would talk to a certain girl
        I forget which boy to which girl   Barrie (2005)

(61)   All of this is quite suggestive that the second wh in these multiple constructions has
         actually undergone extraposition, rather than wh-movement.

OR

(62)   Fox and Pesetsky (2003) propose that at each spell-out domain, linear ordering statements
         are added to an ever growing Ordering Table.

(63)   When ellipsis takes place, it can have a salvation effect by eliminating all statements
         involving deleted material, including the contradictory statements that can result from
         moving too far. Island violation repair is one such situation; possibility of multiple wh-
         fronting is another (similar to the account of Richards mentioned earlier).

(64)   When two wh-phrases are not phase mates, they are not ordered directly. Rather, their
         relative order is determined by transitivity via elements at the edge of the intervening
         phases. "If these connecting links are deleted, phonology doesn't know what to do with
         the remaining elements." Thus, we get a phasemate condition on multiple sluicing,
         accounting for the clausemate effects seen earlier.

(65)   The F&P account, unlike the Right Roof one, would allow multiple sluicing even out of an
         embedded clause, as long as the two wh-phrases both originate in the same embedded
         clause (at which point their linear ordering would be directly established).

(66)   Fred thinks a certain boy talked to a certain girl.
          I wish I could remember which boy to what girl

(67)   A certain boy said that Fred talked to a certain girl.
          *I wish I could remember which boy to what girl

On the other hand, suppose that the source of the sluice in (66) is actually (68)a rather than (68)b.

(68)   a. I wish I could remember which boy talked to what girl
         b. I wish I could remember which boy Fred thinks it is certain talked to what girl

(69)   This would require a sort of accommodation, since it was never actually asserted that a
         boy talked to a girl, merely that Fred thinks that it happened.

(70)   When accommodation is more difficult, multiple sluicing seems considerably less available:

(71)   Fred denied that a certain boy talked to a certain girl.
          ???I wish I could remember which boy to what girl

(72)   Standard simple sluicing is not adversely affected:

(73)   Fred denied that a certain boy talked to a Mary
         a. I wish I could remember which boy
         b. I wish I could remember what girl

(74)   Fred doubts that a certain boy talked to a certain girl.
          ?*I wish I could remember which boy to what girl

(75)   Fred doubts that a certain boy talked to a Mary
         a. I wish I could remember which boy
         b. I wish I could remember what girl

(76)   An anaphor binding test: (77) indicates that the remnant remaining after sluicing can contain an anaphor, bound via 'reconstruction', whose antecedent was in the deleted context.

(77)   ?Everyone said that some pictures of himself hung on certain walls, but I'm not sure how many pictures of himself

(78)   With multiple sluicing, however, acceptability degrades considerably:

(79)   ?*Everyone said that some pictures of himself hung on certain walls, but I'm not sure how many pictures of himself on which walls

(80)   Potential problem:

(81)   Who$_i$ did Mary talk to t_i t_j yesterday [about phonology]$_j$

(82)   I know who Mary talked to yesterday about phonology,
         ?*but I don't know who about semantics

(83)   I know that in each instance one of the girls got something from one of the boys. But they didn't tell me which from which

(84)   Possibly the 'normal' rightwards focus site is not high enough to escape deletion under sluicing, and only a WH-element can move high enough (i.e., into essentially the same kind of geometric relation with a wh-Comp that Spec of such a Comp has, as suggested to me by Milan Rezac).

(85) There is clear evidence that deletion can repair island violations. There is also evidence that deletion can repair a derivation where a normally obligatory movement fails to take place. Lasnik (1995), Lasnik (1999), Lasnik (2001d). It remains an open question whether moving a normally non-movable item can be so remedied.

(86) Big remaining question: Why can't Right Roof violations be repaired by ellipsis?

Appendix: On the Right Roof Constraint

(87) "Why should rules which adjoin terms to the right side of a variable be upward bounded, and not those which adjoin terms to the left of a variable?" Ross (1967)

(88) Chomsky (1973) offers an account for the asymmetry, in terms of his theory in which all movement is bounded, but can (sometimes) proceed successive cyclically, resulting in the appearance of unbounded movement. Chomsky argues that the "asymmetry of boundedness follows from the asymmetry of the Complementizer Substitution Universal":

(89) Only languages with clause-initial COMP permit a COMP-substitution transformation [i.e., wh-movement]   [the Bresnan (1970) reformulation of the Q-Universal of Baker (1970)]

(90) Chomsky's formulation of Subjacency is such that items that move to COMP escape this boundedness. Further, given other of the Chomsky (1973) conditions, an item in COMP can move upward only to another COMP position. Thus, "it follows that there can be, in effect, unbounded movement [only] to the left by iteration of Complementizer Substitution."

(91) There are three salient derivations potentially available.
a. One fell swoop rightwards movement, which will (generally) be straightforwardly excluded by Subjacency.
b. Successive adjunction. This will generally be ruled out by the formulation of Subjacency, which permits escape only via COMP.
c. Successive movement via COMP until a final step of rightwards movement will also be excluded by the requirement that movement from COMP can only be to another COMP.

(92) Needless to say, this account relies on key stipulations. It will therefore be of interest to consider alternatives.

(93) Preventing the one fell swoop derivation is the least problematic aspect. Some version of Subjacency (or the Phase Impenetrability Condition) is still relevant. Another possibility is the Fox-Pesetsky approach, though only for situations where the item to be moved is not rightmost in the entire structure to begin with, as far as I can tell.

(94) The second sort of derivation mentioned above, successive cyclic leftward movement followed by a final step of rightward movement can be very nicely handled by Fox-Pesetsky. All of the leftward movements will be fine, but the final rightward step will yield linear ordering statements that conflict with those already created.

(95) Perhaps most problematic is successive rightwards movement, which might be expected to be just like its mirror image successive leftwards movement. Note that the precedence statements successively created will never be contradicted by later ones.

(96) Here I offer a speculation about that problematic derivation, relating it to abstractly similar illicit derivations in the realms of wh-movement and A-movement.

(97) One long-standing problem with wh-movement (discussed by Lasnik and Saito (1984) and Epstein (1992) among many others) is that once a wh-phrase has moved to the Spec of an interrogative C, it can move no further, as illustrated in (98), where <u>what</u> has moved

through the CP, Spec just under <u>wonder</u>.

(98)   *What did you wonder [*t* [John bought *t*]]

(99)   Intuitively, the moving wh-phrase is trying to reach an appropriate position; once it does it is stuck there. A-movement is known to behave is similar fashion. Overwhelmingly, A-movement from a characteristic Case-checking position is barred:

(100) *Mary is believed [*t* is a genius]

(101) *John seems to *t* [that Bill is the best candidate]

(102) "... movement is a kind of 'last resort.' An NP is moved only when this is required ... in order to escape a violation of some principle [such as] the Case filter ..." Chomsky (1986, p. 143)

(103) "[We must] prevent a nominal phrase that has already satisfied the Case Filter from raising further to do so again in a higher position."   Chomsky (1995, p.280)

(104) Here again, once movement has reached a designated type of position, no further movement (at least of the same type) is possible.

(105) Speculation: Successive cyclic rightwards movement, at least in English, falls under the same generalization.

(106) Rightwards movement in English is focus movement, as discussed by Rochemont (1980), among many others.

(107) Thus, the very first movement will be to the designated position type - focus, so no further (focus) movement will be allowed, just as no further wh-movement was allowed in (98) and no further A-movement was allowed in (100) and (101).

(108) One significant question still remains. I have argued for a rightwards movement account (i.e., of the second wh-phrase) of apparent multiple sluicing in English based on Right Roof effects. However, since sluicing repairs a variety of violations, as discussed earlier, the mystery now is why the Right Roof violation of one fell swoop movement (when the second wh-phrase is originally rightmost in its own clause) cannot be repaired.

(109) Possibly all that can be said at this point is that different operations have different repair potential. I will try to do slightly better than that, relating this problem to one that arose in my treatment of overt object shift in Lasnik (2002).

(110) There the question was why pseudogapping (which I analyzed as VP ellipsis following A-movement of the survivor) cannot repair overly long A-movement, thereby falsely allowing examples like (111):

(111) *Susan thought Mary studied Bulgarian and John did ~~think Mary studied~~ Macedonian

(112) I proposed that this falls under the prohibition of A-movement from a Case position. This was based on the arguments of Lasnik (2001) that base direct object position is a Case position; raising to Spec of Agr$_O$ is not crucial for accusative Case licensing.

(113) Now notice that rightwards movement is not the only focus strategy in English; focus in situ is also available. But then for a focused element, even if it does not undergo a short initial step of rightwards movement, movement to a distant focus position will still be disallowed.

(114) The final question is parallel to the final question that arose for my A-movement analysis

of pseudogapping: Since direct object begins in a Case position, how is it ever permitted to undergo A-movement to Spec of Agr_O? The parallel question here is: Since a focused element in situ is already in a focus position, how is rightwards movement <u>ever</u> possible?

(115) In both instances, long movement is blocked, but short movement is allowed. My speculation about A-movement can carry over to rightwards movement:

(116) The permitted short cases of movement are all internal to a phase; the banned long cases are all across the boundary of a phase. If all checking within a phase is simultaneous, then just this result obtains.

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