

Sluicing

Academic How-Tos, tentative plan:

How to choose a topic: February 2;

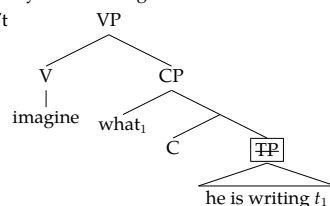
How to read a linguistics paper: February 9;

How to write a linguistics paper: March 9 or March 16.

1 Sluicing: the basics (Ross, 1969)

(1) He is writing but you can't imagine what.

(2) ... but you can't

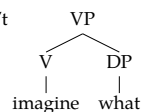


Sluicing is ellipsis that involves deletion of an entire TP (or S, in Ross's (1969) terms).

1.1 Three arguments against "a man that is presently made of straw"

Ross provides three arguments against a possible alternative view of sluicing:

(3) ... but you can't



This is an analysis that does not involve any silent syntactic material. Instead, *imagine* directly selects the DP *what*. This theory would then have to assume an interpretive semantic rule that will allow us to assign *what* the meaning of the direct object of *imagine*.

1.1.1 Case matching

DPs in sluicing show up with Case that we would understand if there is an unpronounced Case-assigner in the ellipsis site, but not otherwise. The example comes from German, where *schmeicheln* 'flatter' assigns dative, while *loben* 'praise' assigns accusative (Ross, 1969):

(4) a. Er will jemandem schmeicheln, aber sie wissen nicht, {*wer / *wen / wem }
he wants someone.DAT flatter but they know not who.NOM who.ACC who.DAT
'He wants to flatter someone, but they don't know who.'

b. Er will jemanden loben, aber sie wissen nicht, {*wer / wen / *wem}
he wants someone.ACC praise but they know not who.NOM who.ACC who.DAT
'He wants to praise someone, but they don't know who.'

Similar facts for English, for those who distinguish between *who* and *whom*:

- (5) a. Ralph is going to invite somebody from Kankakee to the party, but they don't know {✓*who*, ✓*whom*} he's going to invite to the party.
b. Somebody from Kankakee is going to be invited to the party by Ralph, but they don't know {✓*who*, **whom*}.

Question: How are the facts in (5) explained by Ross's proposal?

1.1.2 Number agreement

- Sentential subject: singular agreement.
- DP subject: agreement depends on number of subject.

(6) [_{CP} Which of these problems are solvable] is/*are not obvious.

(7) [_{DP} These problems] *is/are solvable.

Sluicing takes singular agreement, compatible with a full elided CP in the ellipsis site.

(8) Some of these problems are solvable, but [which problems] is/*are not obvious.

1.1.3 Selection

(9) a. She says a she's inviting some men – I wonder *how many men*?

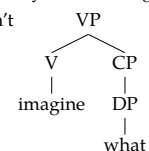
b. *I wonder { those old men
the centerfielder for the Cardiac Kids }
your uncle Casimir }

Wonder selects for CPs, not DPs. If our theory allows *wonder* to select for a DP in the case of sluicing, how do we rule out the sentences in (9b)?

Question: last week we discussed a more sophisticated version of the straw man. Can he defeat these counterarguments? Discuss!

(10) He is writing but you can't imagine what.

(11) ... but you can't



1.2 Three reasons to think that sluicing happens after question formation

Now that we believe that sluicing is a deletion transformation, Ross gives three arguments for thinking that this transformation follows the question formation transformation.

1.2.1 Conditions on the size pied-piping

In his dissertation, Ross (1967) argues for the universal convention of *pied-piping*, which a *wh*-word to “drag along” additional material when it is fronted through some movement operation.¹

We know that, generally, pied-piping can vary in size across constructions and across languages.

- (12) **Pied-piping in Tlingit (Na-Dene; Alaska, British Columbia, Yukon) (Cable, 2010):**
- a. [Daa *sá*] i éesh al’óon? b. [Daakw keitl *sá*] asháa?
 what Q your father he.hunts.it which dog Q it.barks
 ‘What is your father hunting?’ ‘Which dog is barking?’
- c. [Goodéi *sá*] kkwagóot? d. [Goodéi wugootx *sá*] has oowajée i shagóonich?
 where.to Q I.will.go where.to he.went Q they.think your parents.ERG
 ‘Where will I go to?’ ‘Where do your parents think that he went?’
- (13) **Pied-piping in English**
- a. ?? [_{PP} To where] will I go?
 b. * [_{CP} Where did he go] do your parents think?
 c. * [_{CP} That he is going where] do your parents think?
- (14) **Different sizes of pied-piping possible with relativization:** (Ross, 1967, p. 197–198)
- a. Reports [*which*] the government prescribes the height of the lettering on the covers of are invariably boring.
 b. Reports [the lettering on the covers of *which*] the government prescribes the height of are a shocking waste of public funds.
 c. Reports [the height of the lettering on the covers of *which*] the government prescribes should be abolished.
- (15) **Pied-piping in question is much more limited:**
- a. ? [*Which reports*] does the government prescribe the height of the lettering on the covers of?
 b. ?? [The lettering on the covers of *which reports*] does the government prescribe the height of?
 c. ??? [The height of the lettering on the covers of *which reports*] does the government prescribe?

As it turns out, the same amount of pied-piping is possible in questions as in sluicing.

(16) Pied-piping in sluicing

I know he has $\left\{ \begin{array}{l} \text{a picture of somebody, but I don't know} \\ \text{somebody's picture, but I don't know whose (picture)} \end{array} \right\} \left\{ \begin{array}{l} \text{who} \\ \text{of whom} \\ \text{*a picture of whom} \end{array} \right\}$

(17) Pied-piping in embedded questions

I don't know $\left\{ \begin{array}{l} \text{who he has a picture of} \\ \text{of whom he has a picture} \\ \text{*a picture of whom he has} \\ \text{whose picture he has} \end{array} \right\}$

¹ Explained if sluicing follows a question formation operation, a coincidence if they are unrelated.

¹Or, through a transformation, in Ross's terminology.

1.2.2 Conditions on optionality in pied-piping

In some dialects, there are conditions under which prepositions may not pied-pipe. Here: prepositions may not pied-pipe when they are part of a verb-based idiom.

- (18) a. Who are you going to do away with?
 b. * With whom are you going to do away?
- (19) a. What will we have to make do with?
 b. * With what will we have to make do?
- (20) a. Which plot did the FBI get wind of first?
 b. * Of which plot did the FBI get wind first?

Similarly, we can't pied-pipe a preposition in the same contexts in sluicing.

- (21) a. Bill's planning on doing away with one of his in-laws, but I don't know which.
 b. * Bill's planning on doing away with one of his in-laws, but I don't know with which.
- (22) a. We'll have to make do with some kind of vile 3.2 beer for our punch, but I don't know exactly what kind.
 b. * We'll have to make do with some kind of vile 3.2 beer for our punch, but I don't know with exactly what kind.
- (23) a. The FBI got wind of one of the many plots to smoke draft cards, but I can't remember which.
 b. * The FBI got wind of one of the many plots to smoke draft cards, but I can't remember of which.

1.2.3 Conditions on obligatory pied-piping

In some contexts, a preposition *must* be pied-piped and cannot be stranded. This is the case when the preposition introduces some types of adverbial prepositional phrases.

- (24) a. He would report me under some circumstances, but I can only guess under which.
 b. * He would report me (under some circumstances), but I can only guess which under.

Under the same circumstances, we also don't find preposition stranding in sluicing:

- (25) a. Under what circumstances will the moon implode?
 b. * What circumstances will the moon implode under?

If a preposition can be stranded in questions, on the other hand, we find that it can be stranded in sluicing:

- (26) a. Who was she dancing with?
 b. With whom was she dancing?
- (27) a. She was dancing, but I don't know with whom.
 b. She was dancing, but I don't know who with.

2 Three basic kinds of sluices

The examples of sluicing in English we have seen so far can be divided into three categories:

2.1 Sluices with 'inner antecedents'

- (28) She's reading something. I can't imagine what.
- (29) They're going to serve the guests something, but it's unclear what.
- (30) This opera was written by someone in the 19th century, but we're not sure by whom.
- (31) If Sam was going somewhere, Sally would know where. (Chung et al., 1995, p. 241)

2.2 Adjunct sluices

- (32) He's writing, but you can't imagine where/why/how fast/with whom.
- (33) This opera was written in the 19th century, but we're not sure by whom.
- (34) If Sam was going, Sally would know where. (Chung et al., 1995, p. 241)

2.3 Sluices with implicit arguments

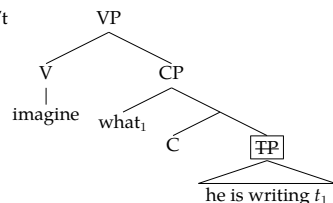
- (35) She's reading. I can't imagine what.
- (36) He shouted again, but I don't know to whom/who to.
- (37) They're going to serve the guests, but it's unclear what. (Chung et al., 1995, p. 242)

3 Formulating a theory of sluicing

3.1 Conditions on identity

Recall: Ross's analysis of sluicing is as follows:

- (38) He is writing but you can't



Lets assume for the moment that Ross's analysis allows deletion of a TP under identity with an overtly pronounced antecedent clause.

Question: Does the analysis in (38) fully explain the data that Ross presents in his paper?

- (39) He is eating something, but I don't know what.
- (40) He is eating, but I don't know what.
- (41) He is eating something, but I don't know how fast.

- What does the identity condition have to look like to explain this data? Write some rules.

3.2 Conditions on argument structure

Question: *serve* has two possible argument structures. What are they?

- (42) a. She served the soup to the students.
- b. She served the students the soup.

Question: The following data teaches us that we need to worry about argument structure when we do ellipsis. How does it restrict the conditions on identity we came up with in the previous section?

- (43) a. She served the soup, but I don't know to whom.
- b. She served the students, but I don't know what.
- (44) a. She served someone the soup, but I don't know who <she served *t* the soup>
- b. *She served the soup, but I don't know who <she served *t* the soup>.

Question: The examples below illustrate a similar point. What is the identity condition they impose sluicing?

- (45) a. John was seen, but I don't know by whom <he was seen *t*>.
- b. *John was seen, but I don't know who <he was seen by *t*>.
- (46) a. Bill is upset. Guess about what <he's upset>.
- b. Bill is upset. *Guess what <he's upset about>.
- (47) a. They're jealous, but it's unclear of who.
- b. Joe was murdered, but we don't know by who.
- c. Last night he was very afraid, but he couldn't tell us of what.
- d. Mary was flirting, but they wouldn't say with who.
- e. We're donating our car, but it's unclear to which organization.
- (48) a. *They're jealous, but it's unclear who(m).
- b. *Joe was murdered, but we don't know who(m).
- c. *Last night he was very afraid, but he couldn't tell us what.
- d. *Mary was flirting, but they wouldn't say who(m).
- e. *We're donating our car, but it's unclear which organization.

Question: What do the following contexts teach us about how to choose an antecedent?

- (49) A: Abby is reading.
 B: Yes, she is reading *Moby Dick*, but I don't know why.
 = I don't know why <Abby is reading *Moby Dick*>.
 ≠ I don't know why <Abby is reading>.
- (50) A: Abby bought a book.
 B: No, PETER bought a book, but I don't know which one.
 = I don't know which one <Peter bought>.
 ≠ I don't know which one <Abby bought>.

4 Sprouting

The phenomenon in which the sluiced material includes an implicit argument or adjunct of the predicate in the antecedent is called *sprouting*.

- (51) a. Ben is reading, but I don't know what.
 b. Ben is jealous, but I don't know of who.
 c. Ben wants to change the flat tire, he doesn't know how.
 d. Ben wants to go on vacation, but he hasn't yet decided when.

A sprouted sluice has to be such that it can be successfully interpreted as an argument or a modifier of the antecedent, which rules out the examples in (52).

- (52) a. *She knew French, but I don't know for whom.
 (cf. *she knew French for Tom)
 b. *They noticed the painting, but I don't know for how long.
 (cf. *they noticed the painting for an hour)

Sluicing in English generally allows for prepositions to be stranded inside the sluicing site, given that P-stranding is allowed in non-elliptical *wh*-questions. However, if the remnant is sprouted, then P-stranding becomes impossible.

- (53) a. Ben is jealous of someone, but I don't know (of) who.
 b. Ben is jealous, but I don't know *(of) who.
 (54) a. Ben is fixing the flat tire with something, but I don't know (with) what.
 b. Ben is fixing the flat tire, but I don't know *(with) what.

- (55) **No New Words** (Chung 2006)
 Every lexical item in the numeration of the sluice that ends up (only) in the elided TP must be identical to an item in the numeration of the antecedent.

5 Swiping

Swiping is the somewhat whimsical acronym of Sluiced Wh-word Inversion with Prepositions In Northern Germanic. In English, swiped remnants appear to be somewhat more acceptable than their unswiped counterparts

- (56) a. Ed gave a talk yesterday, but I don't know what about.
 b. ?Ed gave a talk yesterday, but I don't know about what.

Swiping only occurs under sluicing (57). Moreover, swiped *wh*-expressions are necessarily sprouted (58), but the reverse doesn't hold, i.e., sprouting doesn't require swiping.

- (57) a. He's going to give a talk, but I don't know what about.
 b. *I don't know what about he's going to give a talk.
 (58) a. Harvey was talking, but I don't know who to.
 b. Harvey was talking, but I don't know to who.
 c. *Harvey was talking to someone, but I don't know who to.
 d. Harvey was talking to someone, but I don't know to who.

6 Sluicing in a cross-linguistic perspective

In Ross's analysis, the *wh*-word escapes deletion because regular *wh*-movement takes it to a position outside the sluicing site. This movement is typically thought of as mediated by a [*wh*] feature, but is not a necessity.

6.1 Sluicing in *wh*-in-situ languages

Wh-in-situ languages are languages that in which *wh*-word must not (or sometimes may not) move in order to form a question. (Farsi data from Toosarvandani 2008).

- (59) hads bezan ramin chi xarid.
 guess hit.2SG Ramin what bought.3SG
 'Guess what Ramin bought.'

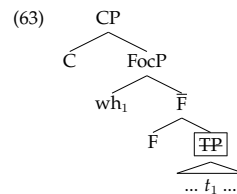
Given this, we might expect sluicing to be impossible. However, this is not the case:

- (60) ramin ye chiz-i xarid. hads bezan chi.
 Ramin one thing-IND bought.3SG guess hit.2SG what
 'Ramin bought something. Guess what.'

Proposal: Farsi has an optional process of focus fronting. When a phrase is focus-fronted, it has to be contrasted with something else in the clause.

- (61) midunam ke sohrab ye ketab xarid vali ne-midunam CHE ketab-i-ro sohrab
 know.1SG that Sohrab one book bought.3SG but NEG-know.1SG what book-IND-OBJ Sohrab
 xarid
 bought.3SG
 'I know that Sohrab bought a book, but I don't know what book he bought.'
 (62) midunam sohrab vis-o koja mixad sham bebare vali yad-am nist KEI mixad
 know.1SG Sohrab Vis-OBJ where want.3SG dinner take.3SG but memory-my is.NEG when want.3SG
 vis-o beresune xune.
 Vis-OBJ make.arrive.3SG home
 'I know where Sohrab wants to take Vis to dinner, but I don't remember when Sohrab wants to bring Vis home.'

FocP is above TP and below CP.



Predicted consequence: an overt complementizer can be pronounced in Farsi sluicing.

- (64) mahin mixad ye chiz-i bexare vali yad-esh ne-miyad ke chi.
 Mahin want.3SG one thing-IND buy.3SG but memory-her NEG-come.3SG that what
 'Mahin wants to buy something, but she doesn't remember what.'

6.2 Sluicing in copular constructions

In some cases, it has been argued that certain forms of sluicing are derived from forms that have nothing to do with question formation.

6.2.1 Specificational copular constructions

Last week, we mentioned the Preposition stranding generalization (Merchant, 1999):

- (65) **The Preposition Stranding Generalization (PSG)**
A language *L* will allow P-stranding under sluicing only if it also allows P-stranding in non-elliptical *wh*-questions.
- (66) **English**
a. Who has Abby talked to?
b. Abby has talked to someone, but I don't know who (to).
- (67) **German**
a. *Wem hat Abby [_{PP} mit *t*] gesprochen?
who.dat has Abby with talked
b. Abby hat mit jemandem gesprochen, aber ich weiß nicht *(mit) wem
Abby has with someone.dat talked but I know not with who.dat

However, there are some exceptions to the PSG that have cast doubt on Merchant's analysis.

- (68) **Spanish** (Vicente, to appear)
a. *Quien ha hablado Andres con?
who has talked Andres with
b. ? Andres ha hablado con alguien, pero no se (con) quien
Andres has talked with someone but not know.1sg with who

Proposal: These sluices are derived from another structure available in Spanish, specificational copular constructions.

- (69) a. The person who I talked to is Mary. *specificational*
b. Mary is the person who I talked to. *predicational*

There are a number of restrictions on P-stranding sluices are also found on specificational copular clauses, but not in regular *wh*-questions. For example, modification of the *wh*-phrase by *mas 'else'*, which is possible in regular *wh*-questions and non-P-stranding sluices, but not in specificational copulas and P-stranding sluices.

- (70) Ana ha hablado con Beatriz, ...
Ana has talked with Beatriz
- a. ... pero no se con quien mas ha hablado Ana.
but not know.1sg with who else has talked Ana
- b. ... pero no se con quien mas.
but not know.1sg with who else
- c. *... pero no se quien mas es la persona con la que ha hablado Ana.
but not know.1sg who else is the person with which has talked Ana
- d. *... pero no se quien mas.
but not know.1sg who else

6.2.2 Predicational copular clauses

Generally, *wh*-movement of an attributive adjective out of its containing DP is ungrammatical in English, but it is ok under sluicing.

- (71) a. *[How diligent] has Judy hired [a *t* worker]?
b. Judy has hired a diligent worker, but I don't know how diligent.

There is a well-defined class of such violations that sluicing is unable to repair: featuring adjectives with a non-intersective reading.²

- (72) a. *Judy has hired a hard worker, but I don't know how hard.
b. *Judy is married to a heavy drinker, but I don't know how heavy.
c. #Olga saw a beautiful dancer, but she won't tell us how beautiful.

The crucial difference between intersective and non-intersective adjectives is that only the former can be used predicatively (Barros et al., 2014).

- (73) a. The worker that Judy has hired is diligent.
b. # The worker that Judy has hired is hard.
c. # The drinker that Judy is married to is heavy.
d. # The dancer that Olga saw is beautiful.

Proposal: Given this asymmetry, the paradigm in (72) follows if we allow these sluices to stem from a predicative source (73), not from regular *wh*-movement.

- (74) a. Judy has hired a diligent worker, but I don't know how diligent <the worker that Judy has hired is *t*>.
b. # Judy has hired a hard worker, but I don't know how hard <the worker that Judy has hired is *t*>.
c. # Olga has seen a beautiful dancer, but she won't tell us how beautiful <the dancer that she saw is *t*>.

NB: Languages that allow left-branch extraction (i.e., languages in which the equivalent of (71) is grammatical) also allow sluicing with non-intersective adjectives.

- (75) **Serbo-Croatian** (Boban Arsenijević, p.c., in Vicente to appear)
a. Jovan je zaposlio tvrdog radnika, ali ne znam [koliko tvrdog]_i <je zaposlio Jovan aux hired hard.acc worker.acc but not know.1sg how hard.acc aux hired Jovan [*t*_i radnika]>.
Jovan worker.acc
'Jovan hired a hard worker, but I don't know how hard'
b. Marija je udata za teskog pijanicu, ali ne znam [koliko teskog]_i <je Marija aux married for heavy.acc drinker.acc but not know.1sg how heavy.acc aux udata za Marija [*t*_i pijanicu]>.
married for Marija drinker
'Mary married a heavy drinker, but I don't know how heavy'

²Note: there might have intersective readings. This is marked with the # diacritic.

6.3 Multiple sluicing

Given the discussion so far, it is unsurprising that multiple *wh*-fronting languages allow sluices with multiple remnants.

(76) **Bulgarian** (Richards, 2001)

Njakoj vidja njakogo, ...
someone.nom saw someone.acc

a. ... no ne znaw koji kogo_k [TP *t_i* vidja *t_k*].
but not know.1sg who.nom who.acc saw

b. ... no ne znaw koj kogo
but not know.1sg who.nom who.acc

More surprising is the fact that languages that don't have multiple fronting seem to allow multiple sluicing.

(77) **English**

a. ? I know that, in each instance, one of the girls got something from one of the boys. But which from which?

b. ? One of the students spoke to one of the professors, but I don't know which student to which professor.

Proposal: Only one *wh*-phrase undergoes fronting, the other one undergoes heavy NP-shift (i.e., movement to the right). (Lasnik, 2014)

(78) ...but I don't know [_{CP} [which students]_{*i*} [*t_i* talked *t_k*] [to which professors]_{*k*}]

Evidence: the second *wh*-phrase does not allow preposition stranding. This is surprising if it involves *wh*-movement, since English generally allows P-stranding. However, heavy NP shift does not allow P-stranding. The data is explained if the second movement is HNPS and not regular *wh*-movement.

(79) a. Some of the students talked to some of the professors, but I don't know [_{CP} which students *(to) which professors].

b. Some of the students talked *t_i* yesterday [_{PP} to some of the professors].

c. Some of the students talked [_{PP} to *t_i*] yesterday [_{DP} some of the professors]_{*i*}.

Moreover, heavy NP shift can't cross a finite clause boundary. In correlation, multiple sluicing in English is impossible if the two *wh*-phrases are not clause-mates (which implies that one has to cross a finite clause boundary).

(80) a. *Some of the students say that Harvey talked to some of the professors, but I don't know [_{CP} which students to which professors].

b. *Some of the students said that Mary will speak *t_i* yesterday [to some of the professors]_{*i*}.

7 Hebrew elicitations!

Lets do some Hebrew elicitations to learn more about ellipsis constructions in Hebrew. This is a useful exercise in how to approach data collection in a language you don't speak, and is useful in case you choose to write a final paper that involves data from a non-English language.

☞ Some common names, predicates

☞ Basic clause structure

– Agreement

– Case marking

☞ Permutations of word order

☞ Questions of your choice!

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