

Gapping

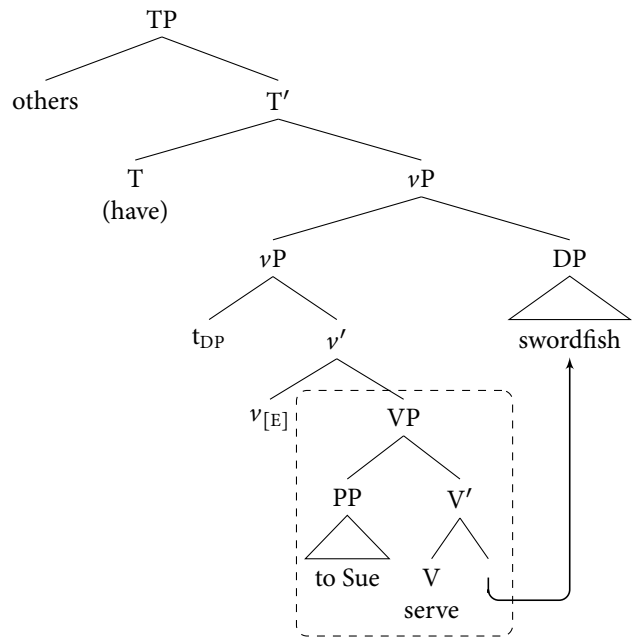
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Three potentially-related constructions in which the verb goes ‘missing’:

- (1) a. *VP Ellipsis*:
 Some of the waiters served mussels to Sue and others did ~~serve mussels to Sue~~ too.
- b. *Gapping*:
 Some have served mussels to Sue and others ~~have served swordfish to Sue~~.
- c. *Pseudogapping*:
 Some have served mussels to Sue, while others have ~~served swordfish to Sue~~.

Question: What is the derivation of these constructions?

- (2) *Move-and-Delete analysis*:



This is problematic since gapping and pseudogapping have a number of different properties.

- (3) *Gapping is restricted to coordinations*:
 - a. Some only ate mussels [CP because others did Δ]
 - b. Some had eaten mussels [CP because others had Δ shrimp]
 - c. *Some had eaten mussels [CP because others Δ shrimp]
- (4) *The gap cannot be embedded* (cf. Hankamer 1979:19):
 - a. Some ate mussels and she claims [CP that others did Δ too]
 - b. Some had eaten mussels and she claims [CP that others had Δ shrimp]
 - c. *Some had eaten mussels and she claims [CP that others Δ shrimp]
- (5) *The antecedent cannot be embedded*:
 - a. ?[She's said [CP Peter has eaten his peas]] and [Sally has Δ her green beans], so now we can have dessert.
 - b. *[She's said [CP Peter has eaten his peas]] and [Sally Δ her green beans], so now we can have dessert.

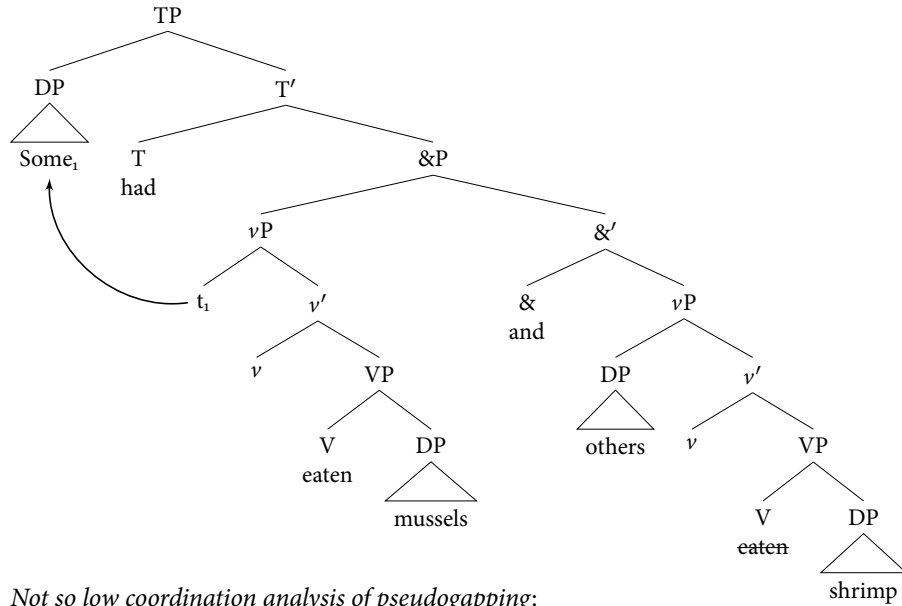
1 Gapping as ATB-movement (Johnson 2009)

- Johnson (2009) has argued that gapping does not involve a *move-and-delete*.
- There are two important features of Johnson's (2009) approach:
 - (6) a. Gapping involves low coordination (of vPs).
 - b. Gapping involves ATB-movement, not VP ellipsis.

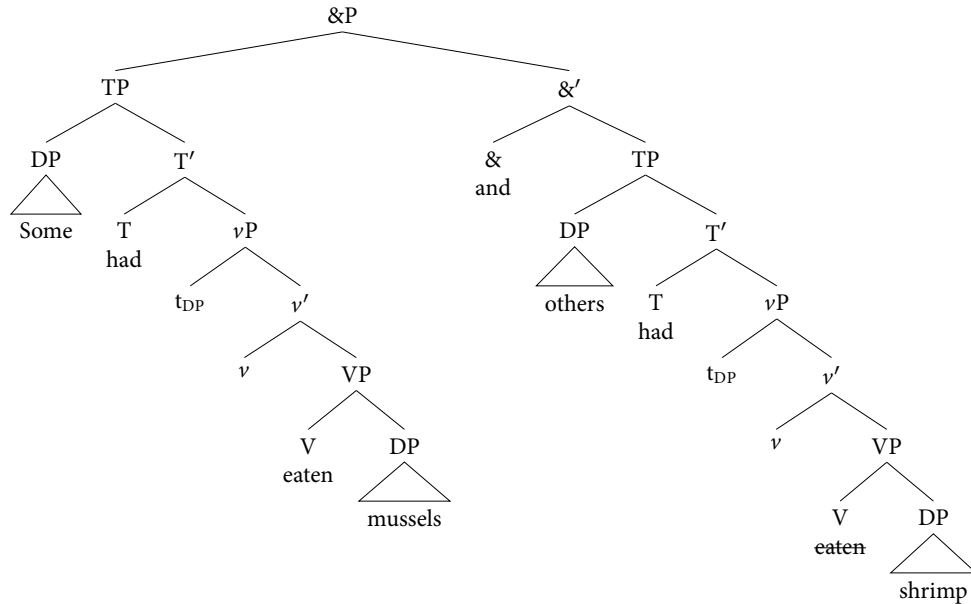
1.1 Low coordination

- Auxiliaries, modals are absent under gapping, but not under pseudogapping.
- One way to get the effect of ellipsis of deletion is by ‘low coordination’ under a particular head, i.e. sharing (Coppock 2001; Lin 2002):
 - (7) a. You can either sit [&P [PP on [DP the table] or [PP on [DP the chair]]]]
 - b. You can either sit [PP on [&P [DP the table] or [DP the chair]]]

(8) *Low coordination analysis of gapping:*



(9) *Not so low coordination analysis of pseudogapping:*



(10) *Important prediction:*

The subject in the first conjunct, c-commands the subject in the second conjunct in gapping, but not in pseudogapping.

C-command relation between the subjects:

(11) *Variable binding* (Johnson 2009:293):

- a. No girl_i can join the army and her_i girlfriend the navy.
- b. *No girl_i can join the army and her_i girlfriend can the navy.

(12) *Principle B* (Agbayani & Zoerner 2004:188):

- a. *Pat_i loves mysteries and she_i/her_i (loves) romances.
- b. Pat_i loves mysteries almost as much she_i does (love) romances.

(13) *Principle C* (Potter 2014:350):

- *He_i can't eat caviar and John's_i brother (eat) chili.

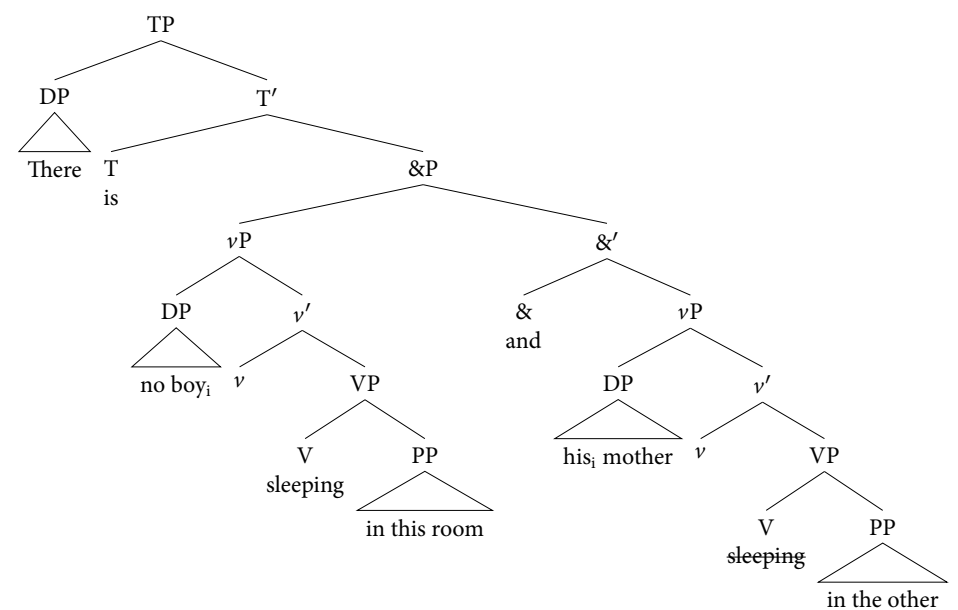
(14) *NPI licensing* (Murphy 2017):

- a. Nobody will buy John's book, (n)or anyone (buy) his CD, for that matter.
- b. Mary will buy John's book, and Jane (buy) his CD.
- c. *Nobody will buy John's book after anyone has (bought) his CD.
- d. Mary will only buy John's book after Jane has (bought) his CD.

(15) *Expletives block binding in gapping* (cf. Johnson 1996/2003:42):

- a. No boy_i is sleeping in THIS ROOM and his_i mother in THE OTHER.
- b. *There is no boy_i sleeping in THIS ROOM and his_i mother in THE OTHER.
- c. There is a boy sleeping in THIS ROOM and his mother in THE OTHER.

(16)



1.2 ATB-movement

(17) *Observation:*

VP ellipsis is not possible in low coordination structures.

(18) *VP ellipsis possible in middle conjunct:*

[John might bathe], but [Sally can't Δ because of her a poison ivy] and [Mary won't dressed], so we may as well give up.

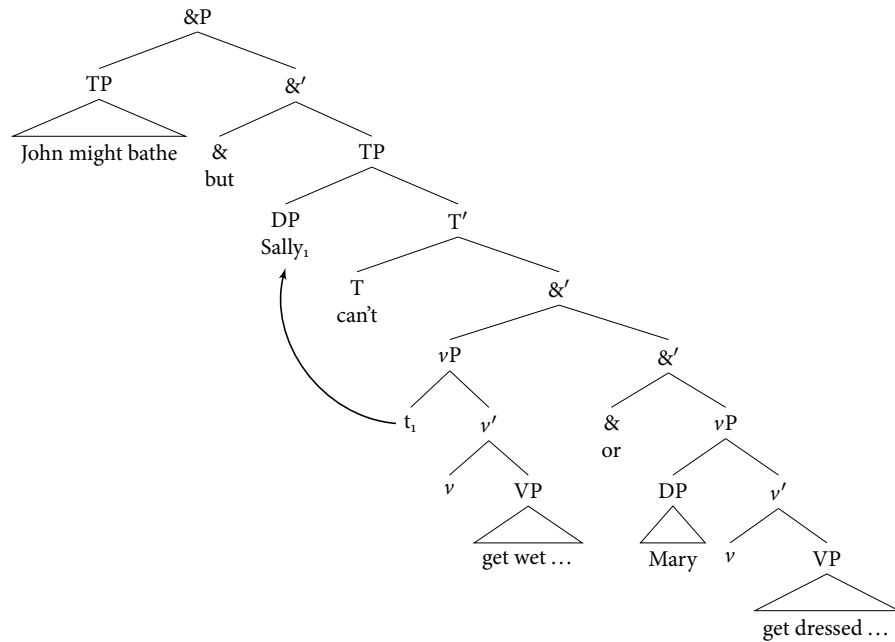
Example (18) involves coordination of full TPs, i.e. no sharing of T.

(19) *Auxiliary can gap in embedded coordination:*

John might bathe, but [Sally can't get wet because of her poison ivy] or [Mary Δ get dressed because of her phobias], so we may as well give up.

This follows if auxiliary gapping is the result of low coordination (i.e. sharing of T):

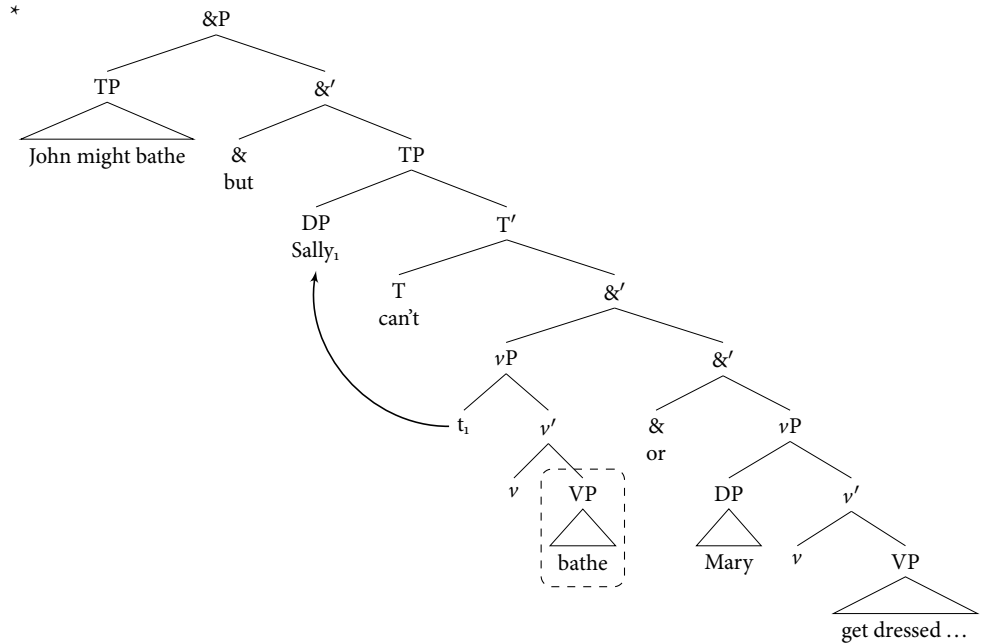
(20)



(21) *No VP ellipsis with auxiliary gapping:*

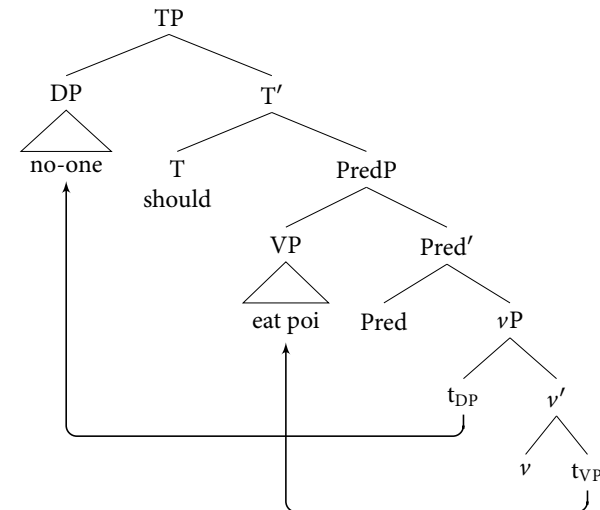
*[John might bathe], but [Sally can't Δ because of her poison ivy] or [Mary Δ get dressed because of her phobias], so we may as well give up.

(22) *

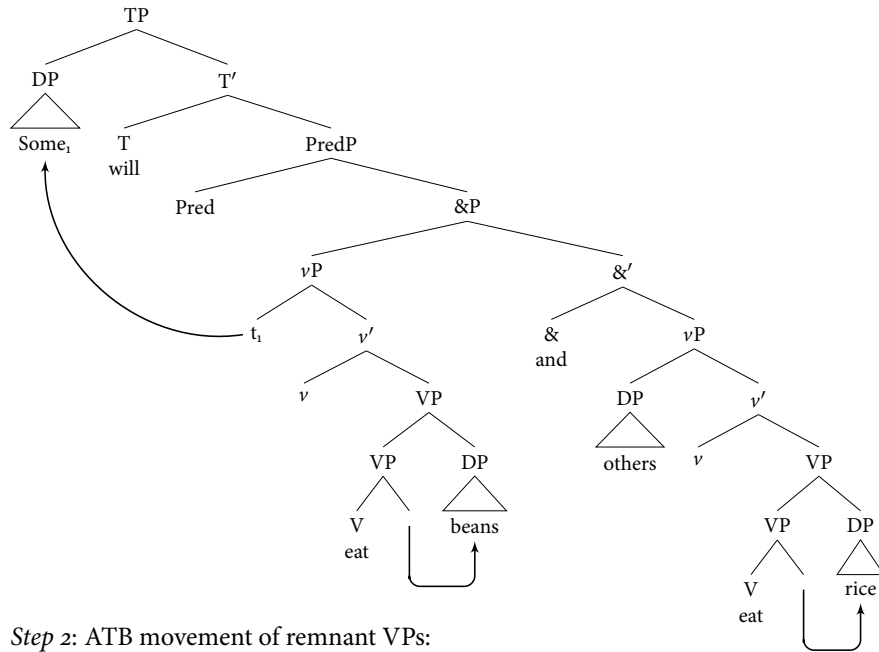


Conclusion: Low coordination seems to block VP ellipsis. But if VP ellipsis is not possible with vP-coordination, then it cannot be what is responsible for deleting the verb in gapping.

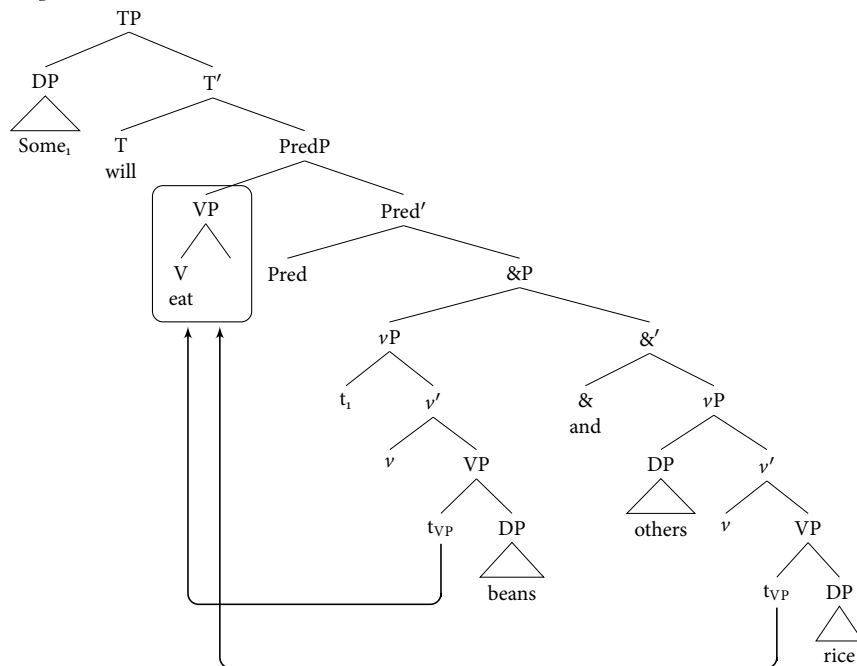
(23) No-one should eat poi.



(24) Step 1: Move remnants out:



(25) Step 2: ATB movement of remnant VPs:



What Johnson can derive:

- The fact that gapping is restricted to coordinations
- The fact that VPE is incompatible with low coordination (i.e. gapping)
- C-command facts
- The fact that the gap cannot be embedded (maybe?)

What he doesn't:

- Why the antecedent cannot be embedded
- Narrow scope of negation (maybe?)
- Case on the subject of the second conjunct

2 Ban on embedded gapping

2.1 Ban on embedded antecedent (Toosarvandani 2016)

Recall that antecedent for a gap cannot be embedded:

(26) *She has said that Peter has eaten his peas, and Sally Δ drunk her milk.

(27) *No Correlate Embedding Generalization:*

The correlates in gapping cannot be embedded inside the first coordinate.

Toosarvandani (2016) argues that this follows from (28).

(28) *Low Coordinate Parallelism* (Toosarvandani 2016:386):

For v Ps α and β , if α and β are coordinated, $\llbracket \alpha \rrbracket \in \text{ALT}(\beta)$ and $\llbracket \beta \rrbracket \in \text{ALT}(\alpha)$.

'The alternative set for a linguistic expression, given by the function ALT, is the set of ordinary meanings derived by replacing a focus-marked constituent with any expression of the same type.'

For (29), since we have parallel structures, (28) is satisfied:

(29) $[\text{TP had } [_{vP_1} \text{ SOME}_F \text{ ordered MUSSELS}_F]]$ and $[_{vP_2} \text{ OTHERS}_F \text{ ~~ordered~~ SWORDFISH}_F]$

(30) a. $\llbracket vP_1 \rrbracket = \text{order}(\text{mussels})(\text{some}) \in \text{ALT}(vP_2) = \{\text{order}(x)(y) \mid x, y \in D_e\}$
 b. $\llbracket vP_2 \rrbracket = \text{order}(\text{swordfish})(\text{others}) \in \text{ALT}(vP_1) = \{\text{order}(x)(y) \mid x, y \in D_e\}$

(31) $[\text{TP has } [_{vP_1} \text{ she said that PETER}_F \text{ has [eaten his PEAS]}_F]]$, and $[_{vP_2} \text{ SALLY}_F \text{ [drunk her MILK]}_F]$

(32) a. $\llbracket vP_1 \rrbracket = \text{say}(\text{eat}(\text{his peas})(\text{peter}))(\text{she}) \in \text{ALT}(vP_2) = \{f(x) \mid x \in D_e \wedge f \in D_{(e,t)}\}$
 b. $\llbracket vP_2 \rrbracket = \text{drink}(\text{her-milk})(\text{sally}) \notin \text{ALT}(vP_1) = \{\text{say}(f(x))(\text{she}) \mid x \in D_e \wedge f \in D_{(e,t)}\}$

'There is some nonfocused material present in the first coordinate that is not found in the second coordinate [*she, say*]. The sentence thus violates Low-Coordinate Parallelism and is ungrammatical.'

2.2 Ban on embedded gaps is not universal

- The ban on having the gap in an embedded clause is not universal. For example, it is possible in Persian.

(33) *Embedded gapping in Persian* (Farudi 2013:76):
 Mashā in ketāb-ro dust dār-e vo Minu mi-dun-e [CP ke māmān-eš
 Masha this book-ACC like have-3SG and Minu IPFV-know-3SG that mother-3SG
 un ketāb-ro <dust>]
 that book-ACC like
 ‘Mash likes this book and Minu knows that her mother likes that book.’

- Thus, we do not want to posit a theoretical analysis that would rule this out *a priori*.

2.3 The bound pronoun effect

- Recall that in English, the gap cannot be in an embedded clause:

(34) *John ate mussels and she claims [CP that others Δ shrimp]

- Grano & Lasnik (2018) show, however, that such examples improve if the subject of the embedded clause is a bound pronoun:

(35) *Bound pronoun effect in embedded gapping* (Grano & Lasnik 2018:466f.):
 a. Mary claims that Jill likes apples and Ann <claims that Jill likes> oranges
 b. ?Mary_i claims that she_i likes apples and Ann_j <claims that she_j likes> oranges

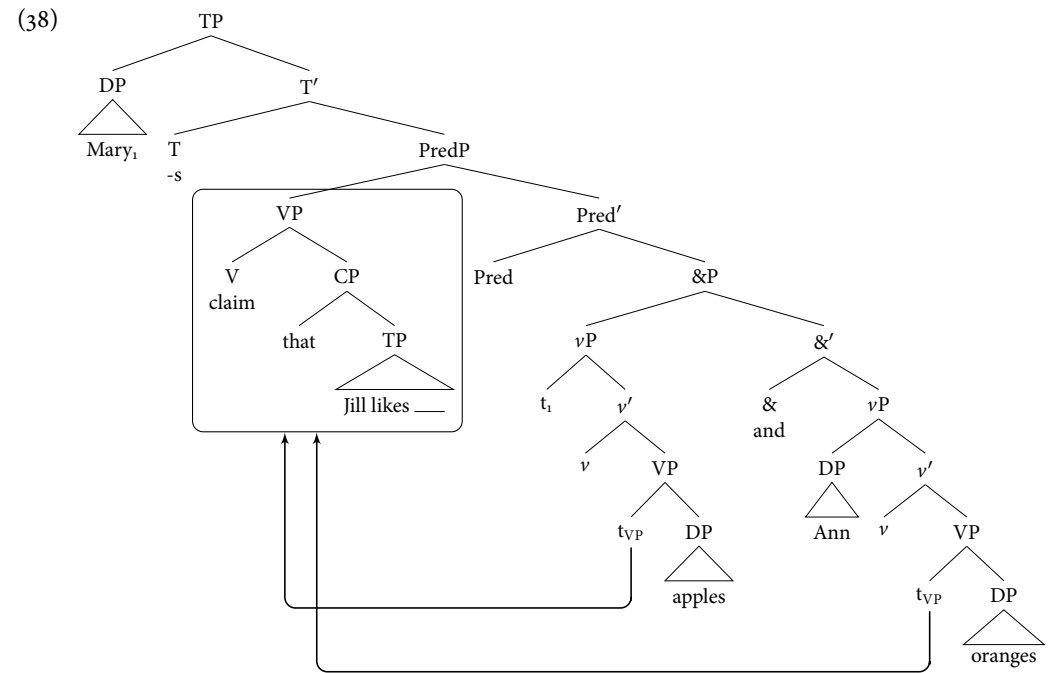
- This holds for a wider range of ordinarily clause-bound phenomena.
- But what does this imply for the proper analysis of gapping?
- Whether or not we adopt VPE or ATB-movement to derive ellipsis, the remnant has to move out the VP:

(36) ... and Ann [VP [VP claims [CP that Jill likes]] oranges]

- The problem here is that rightward movement is clause-bounded (*Right Roof Constraint*)

(37) a. John saw yesterday *the new headmaster*
 b. *John claimed [CP that he loves] yesterday *the new headmaster*

- Thus we predict that *oranges* in (36) cannot adjoin to the matrix VP:



- We would require rightward adjunction out of a CP, which is normally not possible.
- So, why is it possible if the subject of the embedded clause is a bound pronoun?

(39) ?Mary_i claims that she_i likes apples and Ann_j <claims that she_j likes> oranges

- Grano & Lasnik (2018) follow Kratzer (2009) in assuming that bound pronouns enter the derivation unvalued and get their ϕ -features under Agree with a higher antecedent.

(40) a. [_{VP} Ann [_{VP} claim [_{CP} that [_{TP} *pro*_[\phi:\square] ...]]]]
 b. [_{VP} Ann [_{VP} claim [_{CP} that [_{TP} *pro*_[\phi:3SG.F] ...]]]] \Rightarrow *she*

- Crucially, Grano & Lasnik (2018) assume that unvalued ϕ -feature ‘void phasehood’.
- In other words, the CP phase is not spelled-out if it contains an unvalued ϕ -feature.
- Thus, only if there is a bound pronoun in the embedded clause that keeps the phase ‘open’.

(41) a. [_{CP} that [_{TP} *pro*_[\phi:\square] [_{VP} likes oranges]]] (No Spell-Out!)
 b. [_{VP} [_{VP} claims [_{CP} that *pro*_[\phi:\square] likes]] oranges] (Extraposition)
 c. [_{VP} Ann [_{VP} [_{VP} claim [_{CP} that [_{TP} *pro*_[\phi:3SG.F] likes]]] oranges]]

3 The size of conjuncts

- It has been noted that the scope of negation in gapping is variable:

- (42) Ward can't eat caviar and his guest, beans. (Siegel 1984:524)
- a. = 'Ward cannot eat caviar and his guest cannot eat beans'
- b. = 'It cannot be the case that Ward eats caviar and his guest eats beans'

Hypothesis: Gapping can also sometimes involve 'high' coordination of CPs (Centeno 2012; Potter 2014; Frazier 2015; Kubota & Levine 2016; Potter et al. 2017):

- (43) a. [CP Ward can't eat caviar] and [CP Sue ⟨can't eat⟩ beans] ($\wedge > \neg \diamond$)
- b. [TP Ward_i can't [_{vP} t_i eat caviar] and [_{vP} Sue ⟨eat⟩ beans]] ($\neg \diamond > \wedge$)

Is this possible in a strictly low-coordination approach?

- (44) [TP Ward_i can-'t [_{&P} [_{NegP} ⟨-'t⟩ [_{vP} t_i eat caviar]]] and [_{NegP} ⟨-'t⟩ [_{vP} her eat beans]]]

In order to derive the relevant readings, we could assume that negation can either be interpreted in its surface position (scoping above the coordination) or reconstructed in its respective base positions, which would derive narrow scope (see Lechner 2006; Roberts 2010 on HM and scope).

The following example is potentially challenging to a strictly low-coordination approach to gapping:

- (45) Bill asked [which books I gave to Mary] and [which records to John] (Pesetsky 1982:646)

It is tempting to conclude from this that (45) must then have the structure in (46):

- (46) Bill asked [_{CP} which books₁ I gave t₁ to Mary] and [_{CP} which records₂ ⟨I gave t₂⟩ to John].

However, as discussed by Johnson (2014), there are a number of reasons to be suspicious about an analysis with conjoined CPs. For example, one striking fact about English gapping is that conjunctions cannot occur in the second conjunct, suggesting that the conjuncts are smaller than CPs:

- (47) a. *She believes [[_{CP} that some ate natto] and [_{CP} that others rice]]
- b. She believes that [TP some₁ [_{vP} t₁ ate natto] and [_{vP} others rice]]
- (48) a. *He wanted [[_{CP} for some to eat natto] and [_{CP} for others rice]]
- b. He wanted for [TP some₁ to [_{vP} t₁ eat natto] and [_{vP} others rice]]

It seems implausible to assume that coordinated CPs are involved in (46). Instead, we can assume, following Johnson (2014), that the wh-phrase remains in situ in the second conjunct:

- (49) Bill asked which books₁ I [_{vP} gave t₁ to Mary] and [_{vP} ⟨gave⟩ which records to John].

This low coordination analysis can also make sense of the following ungrammatical example from Pesetsky (1982:646):

- (50) *Bill asked [_{CP} which books₁ Mary likes t₁] and [_{CP} which records₂ John ⟨likes t₂⟩]

If we were to assume that CP coordination is involved, the contrast between (45) and (50) would be puzzling. However, under a low coordination approach in which the wh-phrase in the second conjunct is in situ, the ungrammaticality of (50) follows from the fact an in situ object cannot precede the subject in Spec-*vP* (again see Johnson 2014).

4 Default case on the second conjunct

The subject of the second conjunct of a gapped clause shows up in 'default' accusative case:

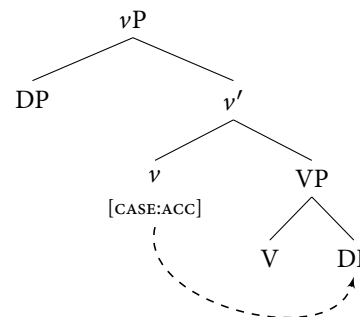
- (51) *Gapping:*
- a. We can't eat caviar and *him/*he* / eat beans.
- b. She grew up in Jacksonville, *me/??I* grew up in Tallahassee. (Schütze 2001:212)
- (52) *Pseudogapping:*
- a. We can't eat caviar, but *he/*him* can eat beans.
- b. She grew up in Jacksonville at the same *I/*me* did grow up in Tallahassee.

Schütze (2001:213) suggests that we get default case when 'Infl is missing from the second clause in some deeper sense' (*Alternative:* & assigns accusative to the subject; see Zoerner 1995).

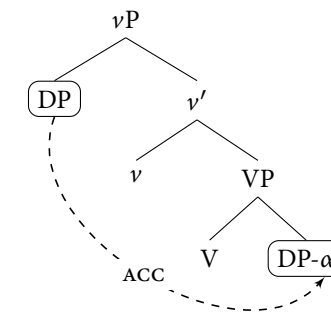
- (53) *First conjunct c-commands the second* (Johnson 2009:293):
- a. No girl_i can join the army and her_i girlfriend the navy.
- b. *No girl_i can join the army and her_i girlfriend can the navy.

The case facts follow from this given a 'Dependent Case' approach (Baker 2015).

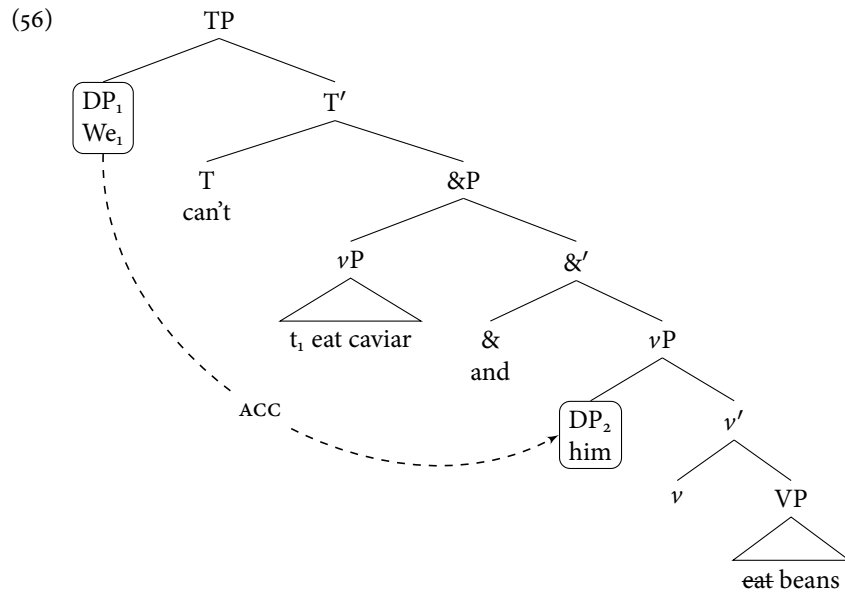
- (54) *Case assignment by a functional head:*



- (55) *'Dependent' case assignment:*

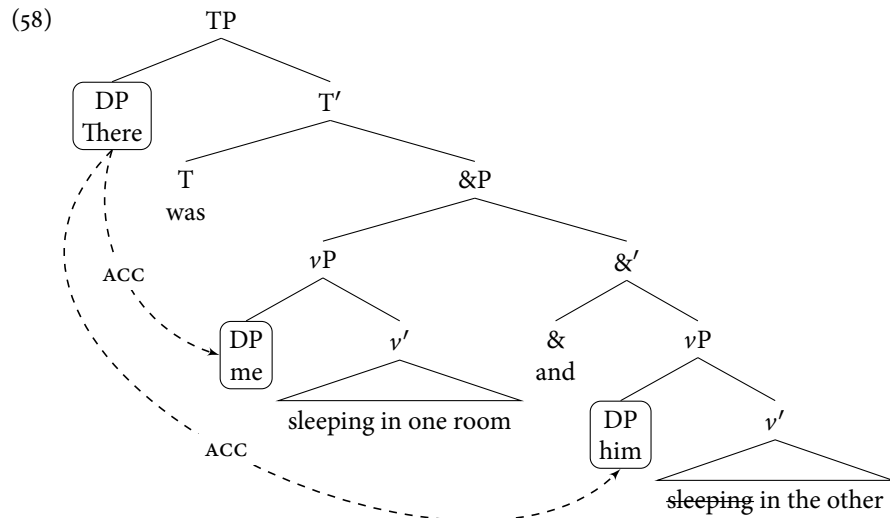


Given asymmetric raising, there is asymmetric c-command between the respective subjects, which is the context for Dependent Case assignment (Murphy 2017)



Merging an expletive licenses blocks asymmetric c-command relation. The expletive can license dependent accusative case on each DP.

- (57) a. I/*me was sleeping in one room and him (sleeping) in the other.
 b. There was me/*I sleeping in one room and him (sleeping) in the other.



Consequence: This analysis is incompatible with large (CP) conjuncts. But how can we derive accusative case if there is a full (finite) TP?

5 Determiner gapping

- It is also possible to gap determiners:

- (59) *Determiner gapping* (McCawley 1993; Johnson 2000):
- Too many Irish setters are named Kelly and ~~too many~~ German shepherds are named Fritz.
 - The duck is dry and ~~the~~ mussels are tough.
 - Few dogs eat Whiskas or ~~few~~ cats eat Alpo.

- However, determiner gapping is only possible if the verb is also gapped:

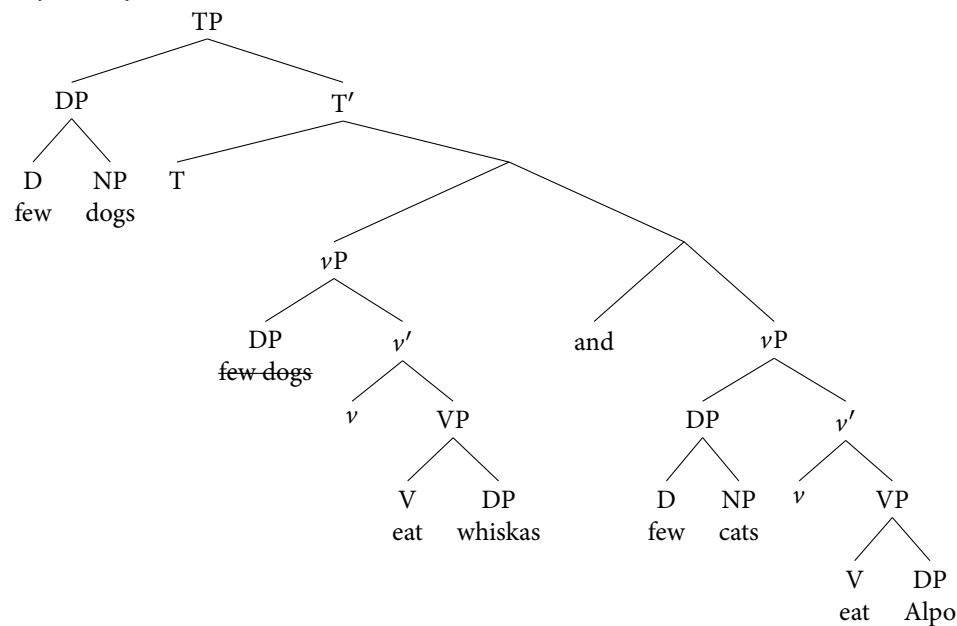
- (60) *Determiner gapping requires verbal gapping:*
- *Too many Irish setters are named Kelly and ~~too many~~ German shepherds are named Fritz.
 - *The duck is dry and ~~the~~ mussels are tough.
 - *Few dogs eat Whiskas and ~~few~~ cats eat Alpo.

Challenge: How do we make determiner gapping dependent on verbal gapping?

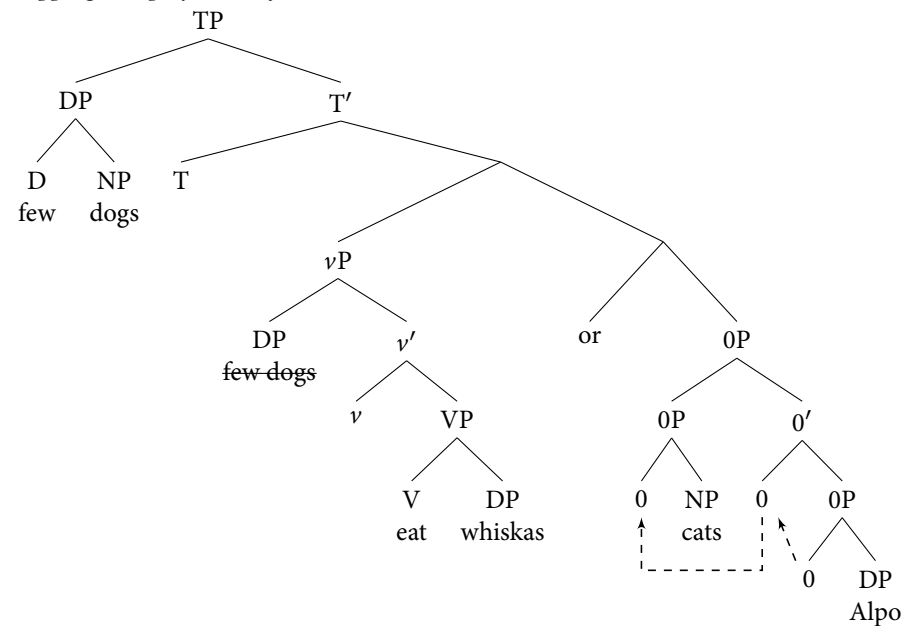
- Ackema & Szendrői (2002) propose an analysis based on Williams' (1997) approach to ellipsis in coordinate structures.
- While the details are unclear, Williams (1997:620ff.) proposes that lexical items can be *bivalent*. This means that they can project twice (i.e. in coordinations).
- Gapping is derived by having one of the projection lines be a null head (0):

- (61) a. [T,T]P: [TP John **will** eat meat] and [TP Mary **will** drink wine]
 b. [T,0]P: [TP John **will** eat meat] and [OP Mary 0 drink wine]
 c. [V,V]P: It is OK to [VP **eat** fish on Fridays] and [VP **eat** meat on Wednesdays]
 d. [V,0]P: It is OK to [VP **eat** fish on Fridays] and [OP 0 meat on Wednesdays]

(62) Projection of bivalent [V,V]:



(66) Gapping as a projection of bivalent [V,0]:



- It is also clear that gapping elide more than a single head (Ross 1970):

(63) a. I want to try to begin to write a novel and Mary ~~wants to try to begin to write~~ a play.
 b. John has been reading *War & Peace* and Mary ~~has been reading~~ 1984.

- In order to account for this, we can assume that a [V,0]-head can license other heads to be null in its extended projection:

(64) John [_{AuxP} has [_{AuxP} been [_{VP} reading W&P]]] and Mary [_{OP} 0 [_{OP} 0 [_{OP} 0 1984]]]

- This is the idea that Ackema & Szendrői (2002) try to capitalize on to derive the dependency of determiner gapping:

(65) *Dependent ellipsis* (Ackema & Szendrői 2002:9):

The 0 head in coordinate ellipsis licenses the heads of its dependents to be 0.

- This means that the head of an argument of a 0 head (i.e. the subject) can also be licensed null:

- We also expect that we can have determiner gapping with an object:

(67) *Determiner gapping in object positions* (Ackema & Szendrői 2002:18):
 Bob gave too many magazines to Jessica and ~~too many~~ newspapers to Joanne.

- Furthermore, it correctly predicts that only the head of an argument can be gapped (i.e. the determiner) and no other prenominal material:

(68) *Adjectives cannot be gapped* (McCawley 1993:246; Johnson 2000:110):
 Italian red wines are outstanding and ~~Italian~~ white wines ~~are~~ excellent.

- It may also account for the fact that determiner gapping seems to result in wide scope (McCawley 1993):

(69) a. No dog should eat Whiskas and no cat ~~eat~~ Alpo (∧ > ¬◇)
 b. No dog should eat Whiskas and/or ~~no~~ cat ~~eat~~ Alpo (¬◇ > ∧)
 'It's not the case that any dog should eat Whiskas and/or that any cat should eat Alpo.'

Note: Johnson (2000) proposes an alternative analysis in which the quantifier is generated outside the coordination.

6 Gapping in DP?

- There are constructions in which it looks like we might have gapped a noun inside a DP:

(70) a. John read _[DP Bill's book of poems] and _[DP Mary's ~~book~~ of music]
 b. I heard _[DP these friends of Mary] and _[DP those ~~friends~~ of Peter]

- However, Yoshida et al. (2012) give numerous reasons to be suspicious that this should be treated on a par with verbal gapping.

(71) *Nominal gapping possible outside of coordinations* (Yoshida et al. 2012:481):

a. *John reads books _[CP because Mary reads magazines]
 b. John's book of music will be published because Mary's ~~book~~ of poems was successful.

(72) *Nominal gaps can be embedded* (Yoshida et al. 2012:482):

a. *John read books and Sally says _[CP that Susan read magazines]
 b. John read Bill's books of music and Sally says _[CP that Susan read Mary's books of poems]

(73) *Cross-conjunct binding does not require nominal gapping* (Yoshida et al. 2012:484):

a. Every_i doctor read about tax law and his_i accountant (*read) about medicine.
 b. Not _[DP every_i doctor's knowledge of tax law] or _[DP his_i accountant's (knowledge) of medicine] is reliable.

- Furthermore, Yoshida et al. (2012) point out that an ATB-analysis of gapping would require Left-Branch Extraction of *Bill's*:

(74) John read _{[XP Bill's _{[ZP book ... _[DP ₁ ₂ of poems] and _[DP Mary's ₁ of music]]]}}

- Instead, Yoshida et al. (2012) advocate a move-and-delete approach (like pseudogapping).

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