

PARASITIC GAPPING: DETERMINER SHARING IS GAPPING + LEE

1 Determiner sharing constructions

- The omission of a determiner or quantifier at the left edge in a coordinate structure is **parasitic on verbal gapping**, (1).

(1) **How many** linguists love Chomsky and ~~how many~~ physicists (*love) Bohr?

How can the dependency of one process on another be captured?
⇒ An earlier (syntactic) ellipsis operation feeds a later (PF) one.

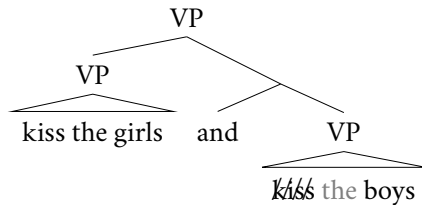
Main claims

- DS comes about by a **conspiracy of two distinct ellipsis operations**: syntactic ellipsis (gapping) + phonological radical deaccenting (Left Edge Ellipsis).
 - Gapping gives rise to a certain coordinate structure. The second conjunct contains a **prosodically prominent edge** that can be targeted by LEE.
 - Evidence for this view of DS comes from the availability of the construction in and Wolof (Niger-Congo) and the sensitivity to PF constraints.
- The possibility to omit a DET in subject or object DPs correlates with the verbal material that has to be deleted **obligatorily**. This can be implemented with coordinations on different levels of phrase structure, such that the “deleted” material is actually outside of the coordination. More specifically, Lin 2002 showed that sharing of a determiner in the subject is dependent on T₀/finite verb-gapping, while determiner sharing in the object only requires V-gapping, (2).
- (2) a. The boys will drink wine and ~~the girls will~~ (drink) whiskey. (Lin 2002)
b. John has given too many magazines to Jessica and ~~has~~ (*given) ~~too many~~ books to Joanne. (Ackema & Szendrői 2002)
- There have been observations that in embedded clauses with movement to Spec,CP, DS is dependent on the **omission of C⁰**, while T⁰ and V⁰ may surface overtly (Ackema & Szendrői 2002), (3). This observation has been supported by my study of 36 English speakers, who crucially allow overt predicates in embedded clauses with (subject or object) DS.

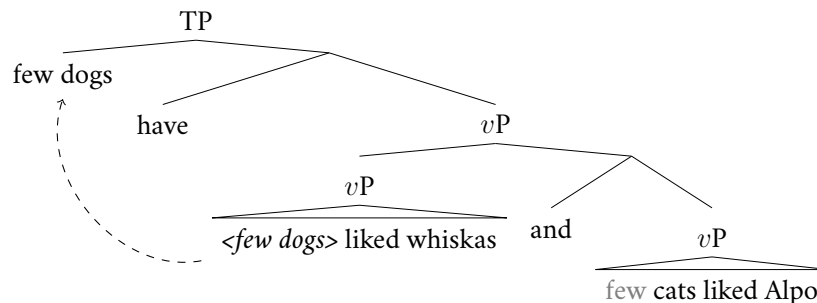
- (3) a. I went to the restaurant whose chef should read a cook book and _ sommelier might work for the CIA.
 b. I don't know how many girls will learn Russian and _ boys will study Portuguese.
- (4) I don't know if many girls have read Chaucer or (#if) ~~many~~ boys, Shakespeare.

⇒ implemented by sufficiently low coordinations (Johnson 2000, Toosarvandani 2013, Potter et al. 2017):

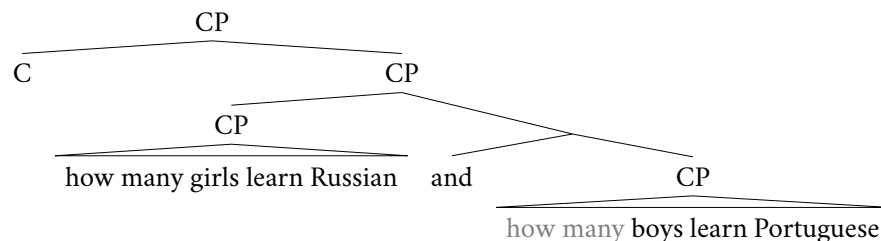
- (5) *Object DS* → V^0 gapping



- (6) *Subject DS* → T^0 /finite verb gapping



- (7) *Embedded DS* → C^0 gapping



2 Left Edge Ellipsis (LEE)

- LEE deletes **prosodically 'weak' elements** at the left edge of a clause under recoverability (Weir 2012, 2016, Napoli 1974, Zwicky & Pullum 1983 a.o.).

- (8) Have you seen the new Star Wars movie yet? (Weir 2012)

- LEE is **more widely available**, cross-linguistically and cross-constructionally:

- related to the *Empty Left Edge Condition* (Sigurðsson & Maling 2008),
- LEE could derive apparent V-first sentences in German (Önnerfors 1997), (9), and in alternative question formation (Han & Romero 2004), (10).

- (9) Das weiß ich nicht. (10) Would you like coffee or would you like tea?
 that know I not

3 DS is sensitive to linear order

1. The deleted material in DS doesn't have to form a syntactic constituent, (11).

(11) **Any old hairless** dog will enjoy a nice warm bath, and ~~any old hairless~~ cat, a comfortable bed.

2. If the left edge of an intonational phrase is occupied by a prosodically heavy constituent, DS becomes impossible, (12).

(12) *Die Pizza haben **wenige** Jungs bestellt, und die Pasta, ~~wenige~~ Mädchen.
 the pizza.ACC have few boys.NOM ordered and the pasta.ACC few girls.NOM
 intended: "Few boys have ordered pizza and few girls have ordered pasta."

3. Evidence for the importance of the left edge also comes from languages that order some quantifiers to the right of the noun, like Wolof (Niger-Congo, Senegal).

- Wolof allows sharing of the wh-element *ñaaata* 'how many' which precedes the noun, (13).

(13) a. **ñaaata** nit ñu-a-di(>ñoy) lekk ceebujen ak **ñaaata** xale ñ-o-y lekk mafe
 how.many girl 3PL-C-IMPF eat ceebujen and how.many boy 3PL-C-IMPF eat mafe
 b. %**ñaaata** nit ñ-o-y lekk ceebujen ak xale mafe
 how.many girl 3PL-C-IMPF eat ceebujen and boy mafe
 "How many girls eat ceebujen (a dish of rice and fish) and how many boys eat Mafe (a dish of lamb and peanut sauce)?"

- Other quantifiers, however, that follow the noun resist sharing, (14).

(14) a. Nag-i **bariwuño** lekk-nan njax ak xaj (lekk-nan) yapp.
 cow-pl few eat-c grass and dog eat-c meat
 "Few cows eat grass and dogs in general eat meat." #few dogs
 b. Nag-i **barinan** lekk-nan njax ak xaj-i (lekk-nan) yapp.
 cow-pl many eat-C grass and dog-pl eat-C meat
 "Many cows eat grass and dogs in general eat meat." #many dogs

4 Theoretical background

4.1 Harmonic Serialism

- I use a derivational variant of OT, **Harmonic Serialism** (McCarthy 2010; Heck & Müller 2013).

Parallel OT: *underlying representation* → *surface structure*

Harmonic Serialism: *underlying representation* → → → → *surface structure*

- Basic assumptions of Harmonic Serialism:

- GEN produces candidates that differ from the input in maximally one change/ the application of one operation.
- After each evaluation, the optimal candidate serves as the input for a new cycle of evaluation.
- These serial evaluations continue until the optimal candidate, i.e. a candidate identical to the most recent input, is found.

4.2 Syntax-to-phonology mapping & constraints

- At Spell-Out, syntactic structure is translated into phonological structure. I follow Selkirk (1995); Weir (2012) in assuming that this mapping takes place in an OT fashion. I use the following constraints based on Selkirk (2011).

(15) MATCH(Clause, ι)
The left and right edges of a clause are mapped to the left and right edges of an Intonational Phrase (ι).

(16) MATCH(Phrase, ϕ)
The left and right edges of a lexical phrase are mapped to the edges of a Phonological Phrase (ϕ).

(17) MATCH(Word, ω)
The edges of a lexical word are mapped to the edges of a Prosodic Word (ω).

- I condense these three mapping constraints into one MATCH(syn, phon) in the derivations below.

(18) *Mapping – toy example*

- a. [DP [D many] [NP [A funny] [N girls]]]
b. [σ many] [ϕ [ω funny] [ω girls]]

- According to the *Lexical Category Condition* (Truckenbrodt, 1999) and the *Principle of the Categorical Invisibility of Function Words* (Selkirk, 1984), the rules of the syntax-phonology interface are not **sensitive to the presence of functional elements** (e.g. they don't receive main word stress; they are often phonologically dependent on other words resulting in a crosslinguistically common pattern of cliticization).

(19) MATCH(ω , LEX) (Weir 2012; Elfner 2011; Selkirk 1995, 2011)
Every phonological word must contain an instance of a lexical word.

- According to Wiklund (2007), symmetric coordinations can exceptionally **introduce a new intonational phrase**. I thus assume that **conjuncts are subject to MATCH(clause, ι)**, even if they are smaller than CPs.

(20) MATCH(conj, ι)
The edges of a conjunct are mapped onto the edges of an Intonational phrase (ι).

- The idea that the left edge of an intonational phrase wants to be **filled with phonologically strong material** is captured by the STRONGSTART constraint in (21) (based on Selkirk 2011, exact formulation from Weir 2016; Harizanov 2014).

(21) STRONGSTART- ι
Intonational phrases should not have at their left edge a constituent that is lower in the prosodic hierarchy than a prosodic word, i.e. phonologically weak.
*(ι (σ x) ...)

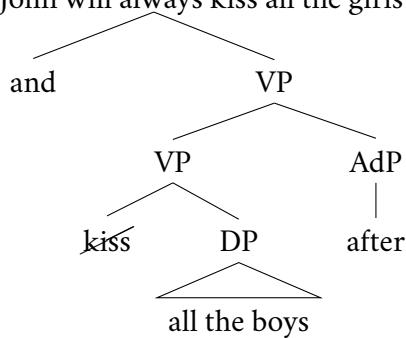
(22) MAX
Every element in the input should have a corresponding element in the output.

5 Analysis

Gapping: I remain agnostic about the exact analysis of gapping. I assume it is a **syntactic process** (deletion, ATB-movement, etc.) that can involve **coordinations on different levels**.

(23) *Object Determiner Sharing*

- a. John will always kiss all the girls first and kiss all the boys after.
 b.



(24) Step 1

	STRONGSTART- ι	MATCH(ω , LEX)	MAX	MATCH(syn, phon)
... [_{VP} kiss [_{DP} all the [_{NP} boys]]] [_{AdvP} after]				
a. (ι (ϕ kiss (σ all) (σ the) (ϕ (ω boys))) (ϕ (ω after)))	*!			
b. (ι (ϕ kiss (ω (σ all)) (σ the) (ϕ (ω boys))) (ϕ (ω after)))		*!		
c. μ (ι (ϕ kiss (σ the) (ϕ (ω boys))) (ϕ (ω after)))			*	

(25) Step 2

	STRONGSTART- ι	MATCH(ω , LEX)	MAX	MATCH(syn, phon)
(ι (ϕ kiss (σ the) (ϕ (ω boys))) (ϕ (ω after)))				
a. (ι (ϕ kiss (σ the) (ϕ (ω boys))) (ϕ (ω after)))	*!			
b. (ι (ϕ kiss (ω (σ the)) (ϕ (ω boys))) (ϕ (ω after)))		*!		
c. μ (ι (ϕ kiss (ϕ (ω boys))) (ϕ (ω after)))			*	

(26) Step 3: convergence

	STRONGSTART- ι	MATCH(ω , LEX)	MAX	MATCH(syn, phon)
(ι (ϕ kiss (ϕ (ω boys))) (ϕ (ω after)))				
a. μ (ι (ϕ kiss (ϕ (ω boys))) (ϕ (ω after)))				

⇒ A parallel OT approach would falsely predict the candidate (24-c) to be the overall optimal output.

Interim summary:

- There is a correlation between the obligatorily deleted verbal material in DS and the levels of phrase structure that are coordinated.
- This can be accounted for, if Gapping happen at different heights of coordination (Potter et al. 2017).
- The height of coordination determines what element occupies its prosodically prominent left edge.
- Weak material like DETs in that position is left unpronounced in order to obey STRONGSTART.
- Serial optimization cycles ensure that complex DETs can be deleted.

6 Predictions

- Prediction 1: DS should not be possible with material that is parsed into a prosodic word. This seems to be borne out, (27).

(27) *Viele JAHRHUNDerte sind von ANARCHIE geprägt und -ZEHNte von FASCHISMUS.
 many centuries are by anarchy characterized and decades by fascism

- Prediction 2: Potter et al. (2017) proposed that gapping is ambiguous between *vP*- and CP-coordinations, which can be detected by different scope interpretations. If subject DS is only possible in low (=vP) coordinations, we would expect to only get a wide scope reading, where a scope taking element scopes over the coordination. However, distributed scope is also possible, (28).

(28) Some girls must have drunk vodka and boys whiskey.
 a. ✓ wide scope: it must have been the case that [some girls drank vodka and some boys drank whiskey]
 b. ✓ distributed scope: [it must have been the case that some girls drank vodka] and [it must have been the case that some boys drank whiskey]

- Prediction 3: In OV languages, where the verb doesn't intervene between the left edge and the object determiner, DS should be possible with an overt verb.

(29) ??...dass Max wenige Filme an die Schüler verteilt oder Bücher an die Lehrer aushändigt
 that Max few movies to the students distribute or books to the teachers deliver
 "that Max distributes few movies to the students and delivers few books to the teachers"

- Prediction 4: DS should be impossible with N – DET word order. A typological study has yet to be conducted.
- Prediction 5: DS should be possible wherever an appropriate contrastive prosodic structure can exist, i.e. potentially also outside of coordination and gapping contexts.

7 Conclusion

- I have shown that determiner sharing is not a completely syntactic deletion process, as proposed by previous analyses, but is sensitive to the prosodic structure.
- This and its dependency on verbal gapping can be captured by an analysis that involves a conspiracy of two distinct ellipsis operations: gapping provides a certain kind of coordination structure, which has a prominent initial position; this position can be targeted by Left Edge Ellipsis.

Appendix

A. Previous Analyses

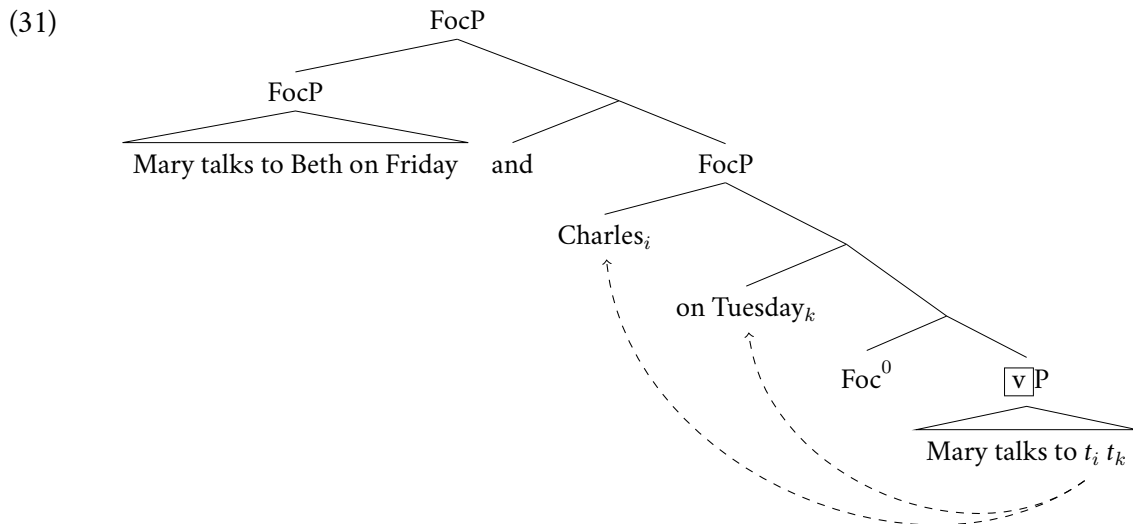
- Types of analyses: **move-and-delete** (Sailor & Thoms 2014; Toosarvandani 2013), **ATB-movement** (Johnson 1996 et seq., Lin 2002), **Multidominance** (Citko 2006; Kim 2011), **in situ deletion** in large conjuncts (Ackema & Szendrői 2002, see also Ott & Struckmeier 2018)

Not non-constituent ellipsis (NCE)

- A valid hypothesis could be that DS is derived by complex non-constituent ellipsis (NCE, Sailor & Thoms 2014; Yatabe 2002; Wilder 1994, 1997), parallel to the more run-of-the-mill NCE (30).

(30) Mary talks to Beth on Friday and ~~Mary talks to~~ Charles on Tuesday.

- Sailor & Thoms 2014 derive such structures by evacuation movement of the overt remnants and subsequent deletion of vP , (31).



- Evidence for such a **move-and-delete** approach comes from (32), where NCE is ungrammatical if one of the remnants is contained in an island.

- (32) a. John wrote everyone's favorite song about football in 2001 and everyone's favorite song about basketball in 2012. (Sailor and Thoms 2014:363)
 b. *?John wrote everyone's favorite song about football in 2001 and about basketball in 2012.

⇒ DS doesn't show the same properties as NCE.

- DS is not sensitive to island violations. Subject islands and the possessive DP islands from Sailor and Thoms (2014) don't play a role. Even if the remnant is embedded in an island, ellipsis in the second conjunct is grammatical, (33).

(33) Your favorite song is played on Wednesday and _ movie on Friday.

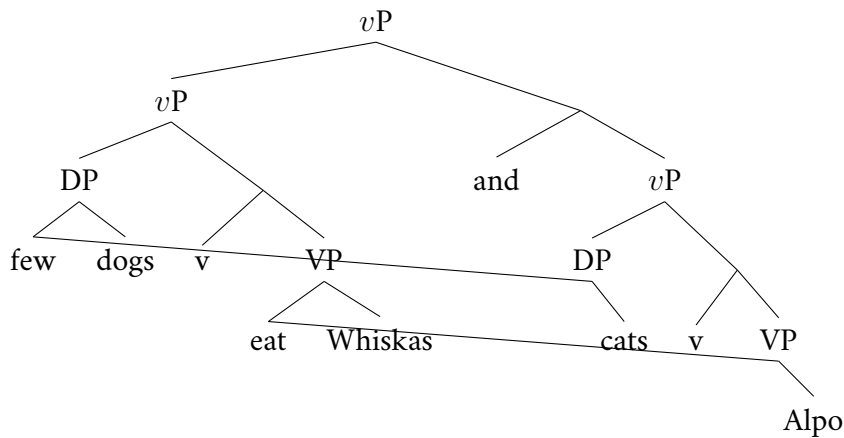
- Additionally, NPs can be remnants in DS. But they are generally immobile in English, (34).

(34) *Red car, I saw that.

⇒ This suggests that no remnant movement is involved in the derivation of DS. It suggests that DS and gapping are distinct deletion processes, and not the result of a single ellipsis operation that targets non-constituents.

Not Multidominance

(35)



- Multidominance approaches predict morphosyntactic mismatches not to be possible. In Polish DS, however, we find mismatches in the form of the pronoun. A DS-structure allows the sloppy reading of a possessive pronoun, (35).

(36) Marysia pożyczyła Andiemu **jej** długopis, a Janek ołówek.
 Mary lent Andy.DAT her pen.ACC and John.NOM pencil.ACC
 “Mary lent Andy her pen and John – pencil.”

Polish, J. Zaleska, p.c.

Not ATB-movement

- How many books did every student like and every professor dislike? (Citko 2005)
 - Seven books (altogether for which it is true that every student liked them and every professor disliked them). (*how many* > & > *every*)
 - Student A liked seven books and Prof. B disliked two books; Student C liked nine books and Prof. D disliked four books... (& > *every* > *how many*)
 - Every student liked seven books and every professor disliked three books. (& > *how many* > *every*)

Sentences that involve determiner sharing are not ambiguous in the same way. They lack one of the readings (*how many* > & > *every*), suggesting that the shared quantifier never moves higher than the coordination.

- (38) a. Wie viele Jungs hat jeder Fussballer verkloppt und _ Mädchen jeder Volleyballer geküsst?
 how many boys has every football.player beaten.up and girls every volleyball.player kissed?
 kissed
 “How many *x* such that every football player beat up *x* and how many *y* such that every volleyball player kissed *y*”
- ✗ 14 kids altogether.
 - ✓ Max has beaten up one boy and Flori has kissed two girls, Hannes has beaten up three boys and Karl has kissed 0 girls ...
 - ✓ Seven boys and seven girls.

See also Ince (2009); Vicente (2010); Toosarvandani (2016); Potter et al. (2017) for arguments against an ATB-movement analysis of gapping.

B. Deletion of lexical material

- Not only function words can be deleted, it's also possible to delete heavy lexical words, (39).

(39) How many nice cats have you ignored and dogs adored?

- **De-accenting:** Elements next to a focused constituent are de-accented, i.e. pronounced with a flat intonation (Ladd 1980), (40).

(40) a. Did you break a table with your hammer?
b. No, I broke [_{FOC} a **w**indow] with my hammer.

- Remnants of gapping are obligatorily focused and marked by pitch accent (Toosarvandani 2013 and references therein).
- Following Tancredi (1992), ellipsis could be due to radical de-accenting of background/topic material.

(41) How many nice **cats** have you ignored and ~~how~~ many nice **dogs** adored?

- The grade of de-accenting (flat intonation vs. non-pronunciation) is subject to some extent of arbitrariness.
- Note also that lexical words cannot be deleted freely. It has been reported that adjectives can only delete if they are preceded by a deleted D/Q, (42).

(42) a. *?Italian red wines are excellent and white wines outstanding. (McCawley 1993)
b. Any Italian red wine is excellent and white wine outstanding. (McAdams 2012)

⇒ This is reminiscent of the Principle of Minimal Compliance (Richards 1998) and should be modeled in an adequate mechanism.

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