

In Search of Unpronounceable Structure

1 Ellipsis and Syntactic Representation

Ellipsis is deletion of a VP under identity with some antecedent VP, where “identity” may be structural/syntactic (as in Wasow 1972; Fiengo and May 1994; Chung, McCloskey, and Ladusaw 1995, etc.) or logical/semantic (as in Sag 1976; Rooth 1992; Merchant 2001, etc.). This hypothesis does not entail that elided constituents must have exactly the same syntactic structures as their overt counterparts; instead, the predictions are more subtle:

- (1) *Ellipsis and Syntactic Representation*
If ellipsis involves deletion of syntactic structure, then:
 - i. Elided constituents should be sensitive to syntactic constraints in general.
 - ii. However, since ellipsis (by definition) does not require pronunciation of the “missing” structure, elided constituents should be insensitive to syntactic constraints that derive from morphophonological properties of lexical items.

In particular, ellipsis should license PF-representations that contain objects that do not have morphological instantiations, which would otherwise trigger a violation of Full Interpretation (Chomsky 1995b), which requires all (PF/LF) symbols to have interpretations at the (PF/LF) interface levels.

The purpose of this talk is to describe three case studies that bear out this prediction.

2 Attributive Comparative Deletion

Kennedy and Merchant 2000: ‘Attributive Comparative Deletion’, *Natural Language and Linguistic Theory* 18.1, 89-146.

- Attributive comparative deletion constructions do not show left branch island effects when the left branch island is targeted by ellipsis.
- Extraction of attributive modifiers is ruled out not by a configurational constraint governing empty categories or operator/variable dependencies, but rather by a constraint on the morphophonological instantiation of syntactic feature combinations.
- Since ellipsis does not require pronunciation of the omitted structure, elided constituents are insensitive to syntactic constraints that derive from morphophonological properties of lexical items.

2.1 No Left Branch Effects in Comparative Ellipsis

Comparative deletion constructions that target just an attributive adjective are ungrammatical (Plich 1965; Pinkham 1982; Kennedy and Merchant 2000):

- (2) a. *The Cubs start a more talented infield than the Sox start an outfield.

- b. *Jones produced as successful a film as Smith produced a play.

This follows if comparatives are *wh*-structures (Chomsky 1977): (2) are structurally parallel to the questions in (4), which violate the Left Branch Constraint (LBC).

- (3) a. *The Cubs start a more talented infield than [*Op*_i the Sox start [*DP* an *t_i* outfield]]
b. *Jones produced as successful a film as [*Op*_i Smith produced [*DP* a *t_i* play]]
- (4) a. *How talented_{*t_i*} do the Sox start [*DP* an *t_i* outfield]? *How successful_{*t_i*} did Smith produce [*DP* a *t_i* play]?

What *is* surprising is that ellipsis in the comparative clause seems to eliminate LBC violations (Pinkham 1982; Kennedy and Merchant 2000):

- (5) a. The Cubs start a more talented infield than the Sox (do).
b. Jones produced as successful a film as Smith (did).
- (6) a. The Cubs start a more talented infield than [*Op*_i the Sox (do) ~~[*TP* start [*DP* an *t_i* ~~infield~~]]~~]
b. Jones produced as successful a film as [*Op*_i Smith (did) ~~[*TP* produced [*DP* a *t_i* ~~infield~~]]~~]

2.2 The Syntax of Attributive Modification

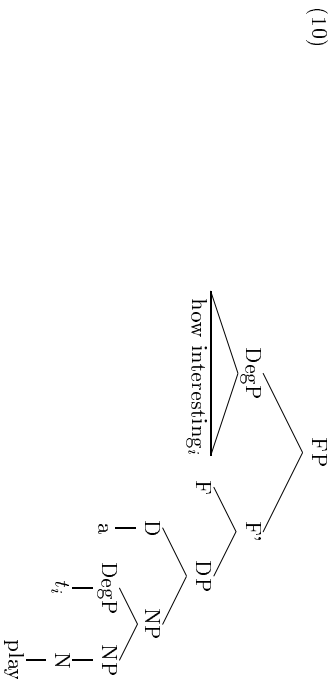
The base position of an attributive modifier (categorically a DegP) is right adjoined to NP (Svenonius 1992):



Inverted DegPs indicate that some attributive modifiers must move to the left of D⁰ (Boinger 1972; Bresnan 1973; Weisenschläger 1981; Baker 1989; Corver 1990; Hendrik 1990).

- (8) a. [How interesting a play] did Brio write?
b. I ate [foo big a piece].
c. If I ever see [that disgusting a movie] again, I'll ask for my money back.
d. Bob didn't write [as detailed a proposal] as Sheila did.
e. He took [so big a piece] that he couldn't finish it.
- (9) a. *[A how interesting play] did Brio write?
b. *I ate [a too big piece].
c. *If I ever see [a that disgusting movie] again, I'll ask for my money back.
d. *Bob didn't write [an as detailed proposal] as Sheila did.
e. *He took [a so big piece] that he couldn't finish it.

K&M propose that the position an inverted DegP — as well as an intermediate landing site for the *w/h*-operator in comparatives — is the specifier of a functional phrase within the nominal projection but above DP: “FP” (cf. Bennis, Corver, and den Dikken 1998; see Corver 1990 for arguments that the landing site of inversion is not SpecDP).



There are three pieces of independent evidence for this syntactic analysis.

1. Functional ‘of’ The head of FP can sometimes be realized as *of*, as in the following examples (cf. constructions like *a bear of a guy* discussed in Bennis et al. 1998).

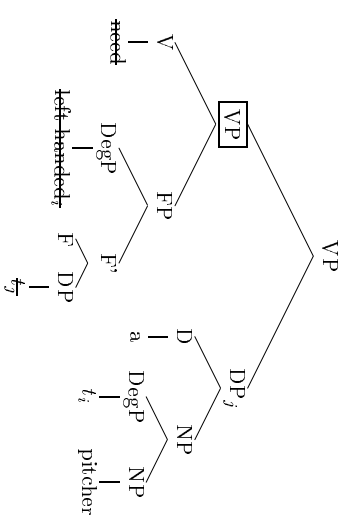
- (11)
- [How long of a novel] did Brio write?
 - I ate [too big of a piece].
 - If I ever see [that disgusting of a movie] again, I’ll ask for my money back.
 - Bob didn’t write [as detailed of a proposal] as Sheila did.
 - He took [so big of a piece] that he couldn’t finish it.

2. Parasitic pseudogapping An attributive modifier can be “caught” by pseudogapping; (12)-(14) are ambiguous between the (b) and the (c) interpretations.

- (12) I have written a successful play, but you have a novel.
- I have written a successful play, but you have written a novel.
 - I have written a successful play, but you have written a successful novel.
- (13) The Cubs need a left-handed hitter more than they do a pitcher.
- The Cubs need a left-handed hitter more than they need a pitcher.
 - The Cubs need a left-handed hitter more than they need a left-handed pitcher.
- (14) I buy expensive shoes because I don’t suits.
- I buy expensive shoes because I don’t buy suits.
 - I buy expensive shoes because I don’t buy expensive suits.

If pseudogapping involves movement of the “remnant” phrase out of VP, followed by VP-deletion (Kuno 1981; Jayaseelan 1990; Lasnik 1995; Johnson 1997; see Sag 1976; Levin 1986; Miller 1992 for qualifications), the possibility of the (c) interpretations follows directly from the structure in (10):

- (15) The Cubs need a left-handed hitter more than they do...



3. Evaluative ‘make’ The verb *make* has an “evaluative” use that requires an attributive modifier, as shown in (16).

- (16)
- Peaches make delicious tarts.
 - #Peaches make tarts.

This restriction appears to be relaxed in pseudogapping contexts, however:

- (17)
- Peaches make delicious pies more often than they do tarts.
 - #Peaches make delicious pies more often than they make tarts.

On the FP analysis, (17a) can be assigned the structure in (18), which satisfies the requirement that the complement of *make* have an attributive modifier.

- (18) Peaches make delicious pies more often than they do [~~VP make~~ [~~FP~~ [~~DegP~~ [~~delicious~~]_{F0} ~~t_i~~]]]

Summary

- Attributive modifiers can, and sometimes must (see (9) above), raise from their base position at the NP level to the specifier of a functional head within the nominal projection but above the determiner.
- Since this movement is clearly licensed, it must be the case that the locus of LBC violations is movement out of SpecFP, not movement from the base position of the attributive modifier.

2.3 K&M’s PF Analysis of the Left Branch Constraint

Extraction of left branch modifiers in English (and related languages) is regulated by the principle of Full Interpretation (Chomsky 1981, 1986, 1995b), which requires that every element in a particular interface representation have an interpretation at that interface.

1. In the case of the syntax-phonology interface, this means that all terminal nodes — structured bundles of syntactic features — must have a phonological value.

- Halle and Marantz (1993): a syntactic object “has a phonological value” if and only if it can be paired with a corresponding morphophonological matrix from the lexicon.
- This leaves open the possibility that the syntactic component can derive representations that are well formed in all respects except that they contain objects without morphophonological instantiations.

In DegP inversion/attributive CD, a [+wh] DegP moves through SpecFP, with the result that the head of FP is assigned a [+wh] feature by spec-head agreement.

- (19) *The LBC@PF Hypothesis*
The English lexicon lacks a $F^0_{[+wh]}$ head.

(20)-(21) are ungrammatical because the syntactic representations are unpronounceable: they violate Full Interpretation at the PF interface.

- (20) *The Cubs start a more talented infield than [Op_i the Sox start [$FP\ t_i\ F^0_{[+wh]}$] [DP an t_i outfield]]]

- (21) *How talented $_i$ do the Sox start [$FP\ t_i\ F^0_{[+wh]}$] [DP an t_i outfield]]?

In order to generate a well-formed structure, the [+wh] feature on F^0 must be eliminated. This can happen in two ways:

Pied-piping Pied-pipe the entire FP with the *wh*-operator, in which case the [+wh] feature on F^0 can be checked in the normal way.

- (22) [FP How talented an outfield] $_i$ do the Sox start t_i ?

Ellipsis Elide a constituent containing the offending $F^0_{[+wh]}$ head.

- (23) The Cubs start a more talented infield than [Op_i the Sox (do) [~~FP start [$FP\ t_i\ F^0_{[+wh]}$] [DP an t_i infield]]]]]~~

2.4 Some predictions

1. Pseudogapping should also license left branch extractions in attributive CD. As K&M point out, this is correct:

- (24) a. The Sox start a more talented infield than they do an outfield.
b. Jones produced as successful a film as she did a play.
c. Abby wrote a more interesting novel than she did a play.
d. Erik drives a more expensive car than he does a motorcycle.

2. If the LBC is a reflex of lexical inventory, reflecting whether or not a language has a morphophonological instantiation of a $F^0_{[+wh]}$ head, rather than a structural condition, then it should show a wide degree of cross-linguistic variation. This is true, as pointed out in Ross 1967 and Grosu 1974, 1994.

- All other things being equal, if a language obeys the left branch constraint, then attributive CD should be acceptable only if deletion also applies; if, however, a language does not obey the left branch constraint, then attributive CD should be acceptable without deletion. This is also correct (see Kennedy and Merchant 2000).

2.5 Summary

- The LBC is a constraint on the morphophonological instantiation of syntactic representations.
- Ellipsis involves deletion of syntactic representations, and so “bypasses” morphophonological instantiation (cf. Wasow 1972).
- Therefore, ellipsis of a constituent containing the gap in attributive comparatives licenses unpronounceable structure.

3 A (Covert) Long-Distance Anaphor in English

Kennedy and Lidz 2001: ‘A (Covert) Long-Distance Anaphor in English’, *Proceedings of the 20th West Coast Conference on Formal Linguistics*, Cascadia Press, Cambridge, Mass.

- Strict readings of reflexives in English comparative stripping constructions are possible only when the embedded subject is (in some sense) ‘non-referential’.
- Such readings involve a long-distance anaphor that has no morphological realization.
- The English long-distance anaphor can only be detected in ellipsis, because morphological realization is not required.
- Interpretive differences between stripping and VP-deletion are due to independently motivated properties of the two ellipsis constructions.

3.1 The distribution of ‘strict reflexives’ in comparative stripping

Strict interpretations of reflexives in comparative stripping appear to be sensitive to the referential properties of the embedded subject.

- (25) *Comparative+Stripping*
- Fred defended himself better than Barney.
= better than Barney defended himself (sloppy)
≠ better than Barney defended him (*strict)
 - Fred defended himself better than the court-appointed lawyer.
= better than the court-appointed lawyer defended himself (sloppy)
= better than the court-appointed lawyer defended him (strict)
- (26) *Comparative+VP-deletion*
- Fred defended himself better than Barney did.
= better than Barney defended himself (sloppy)
= better than Barney defended him (strict)
 - Fred defended himself better than the court-appointed lawyer did.
= better than the court-appointed lawyer defended himself (sloppy)
= better than the court-appointed lawyer defended him (strict)

- (27) *Pronoun and demonstrative: sloppy only*
- a. Fred defended himself better than you.
 ≠ better than you defended yourself (sloppy)
 ≠ better than you defended him (*strict)
- b. Fred defended himself better than that guy.
 = better than that guy defended himself (sloppy)
 ≠ better than that guy defended him (*strict)

- (28) *QNPs: strict or sloppy*
- a. Fred defended himself better than every court-appointed lawyer.
 = better than every court-appointed lawyer defended himself (sloppy)
 = better than every court-appointed lawyer defended him (strict)
- b. Fred defended himself better than any of the lawyers.
 = better than any of the lawyers defended himself (sloppy)
 = better than any of the lawyers defended him (strict)

If there is no ellipsis, we see the usual pronoun/reflexive distinctions:

- (29) a. Fred_i defended himself_i better than Barney_j defended himself_j/_{*i}.
 b. Fred_i defended himself_i better than Barney_j defended him_i/_{*j}.
- (30) a. Fred_i defended himself_i better than the lawyer_j defended himself_j/_{*i}.
 b. Fred_i defended himself_i better than the lawyer_j defended him_i/_{*j}.

The Descriptive Generalization

Strict readings are always allowed in comparative VP-deletion, but strict readings in stripping depend on the interpretation of the embedded subject:

- (31) [... NP_i ... REF_{FL_i} ... [Adjunct NP_j [~~REF_{FL_j} ...~~] ...] only if NP_j need not be individual-denoting

Our Hypothesis

The anaphor in the elided clause is a long-distance reflexive, and the contrasts in (25)-(28) are due to “blocking effects” governing the binding of long-distance anaphors.

- (32) [... NP_i ... himself_i ... [Adjunct NP_j [~~REF_{FL_j} ...~~] ...]

3.2 A Long-Distance Anaphor in English

Properties of Chinese long-distance anaphor (Huang and Lin 2001):

- (33) *Not subject to SSC*
 Lisi zhidao Zhangsan chang piping ziji
 Lisi know Zhangsan often criticize self
 ‘Lisi knows that Zhangsan often criticizes him/himself.’

- (34) *Subject orientation*
 Zhangsan song gei Lisi yi-zhang ziji-de xiangpian
 Zhangsan give to Lisi_j one-CL self_i/_{*j}-DE picture
 ‘Zhangsan gives Lisi a picture of self (=Z/*L).’

- (35) *1st/2nd person blocks long-distance binding by 3rd person antecedent*
 Zhangsan danxin wo/ni hui piping ziji
 Zhangsan worries I/you will criticize self
 ‘Zhangsan is worried that I/you will criticize myself/yourself/*him.’

- (36) *3rd person does not block LD-binding by 1st/2nd person*
 wo/ni danxin Zhangsan hui piping ziji
 I/you worry Zhangsan will criticize self
 ‘I/you worry that Zhangsan will criticize himself/me/you.’

- (37) *Nonsubjects sometimes block LD-binding even though not potential antecedents*
 Zhangsan gaosu wo Lisi hen ziji
 Zhangsan tell me Lisi hate self
 ‘Zhangsan told me that Lisi hates himself/*me/*him.’

- (38) *A deictically identified 3rd person NP (TA) blocks LD-binding*
 Zhangsan shuo TA qipian-le ziji
 Zhangsan say he cheat-PRF self
 ‘Zhangsan said that HE cheated himself/*him.’

- (39) *Plurals don't block LD-binding by singular antecedents*
 Lisi zhidao tamen chang piping ziji
 Lisi know they often criticize ziji
 ‘Lisi knows that they often criticize themselves/him.’

- (40) *Singulars block LD-binding by plural antecedents*
 tamen zhidao Lisi chang piping ziji
 they know Lisi often criticize self
 ‘They know that Lisi often criticizes himself/*them.’

Parallel properties of elided anaphor in English comparative stripping:

- (41) *Not subject to SSC*
- a. John showed Mary someone's picture of himself before the photographer.
 = before the photographer showed Mary someone's picture of himself. (local)
- b. ... before the photographer showed Mary someone's picture of him/John. (LD)
- c. ... before the photographer ~~showed Mary someone's picture of himself~~
~~showed Mary someone's picture of ziji~~

- (42) *Subject orientation*
- a. John showed Mary someone's picture of himself before the photographer.
 = before the photographer showed M. someone's picture of himself (local)
 ≠ before the photographer showed M someone's picture of him. (LD)
 ≠ before the photographer showed Mary someone's picture of her. (*LD-

- (43) *Non-3rd-person blocks LD-binding by 3rd-person antecedent*
- b. ...before the photographer ~~showed Mary~~ [~~VP someone's picture of ziji~~]
 nonsubject)
- a. The lawyer defended himself better than you.
 = better than you defended yourself
 ≠ better than you defended him (sloppy)
 The lawyer defended himself better than you ~~defended ziji~~ (*strict)
- (44) *3rd-person does not block LD-binding by non-3rd-person antecedent*
- a. You defended yourself better than the lawyer.
 = better than the lawyer defended himself (sloppy)
 = better than the lawyer defended you (strict)
- b. You defended yourself better than the lawyer ~~defended ziji~~
- (45) *Nonsubjects can sometimes block LD-binding even though not potential antecedents*
- a. John showed me somebody's picture of himself before the photographer.
 = before the photographer showed me someone's picture of himself (local)
 ≠ before the photographer showed me someone's picture of him (*LD)
 ≠ before the photographer showed me someone's picture of me (*LD-nonsubject)
- b. ...before the photographer ~~showed me somebody's picture of ziji~~
- (46) *A deictically identified 3rd person NP induces blocking*
- a. Fred defended himself better than Barney.
 = better than Barney defended himself (sloppy)
 ≠ better than Barney defended him (*strict)
- b. better than Barney ~~defended ziji~~
- (47) *Plurals don't block singular antecedents*
- Fred defended himself better than the lawyers.
 = better than the lawyers defended themselves (sloppy)
 = better than the lawyers defended him (strict)
- (48) *Singulars do block plural antecedents*
- The lawyers defended themselves better than the judge.
 = better than the judge defended himself (sloppy)
 ≠ better than the judge defended them (*strict)

The constraints on strict readings of reflexives in comparative stripping mirror the constraints on long-distance binding of *ziji*, suggesting that the anaphor in the elided clause is in fact a long-distance anaphor.

The question

Why does the English long-distance anaphor only “appear” under ellipsis?

3.3 Licensing the English Long-Distance Anaphor

The explanation for the disappearance of Left Branch effects outlined in section 2 can be extended to explain the appearance of long-distance anaphors under ellipsis.

1. English does not have an overt LDA because the feature matrix corresponding to this object does not have a morphological instantiation in English. Since an overt LDA would violate Full Interpretation, overt anaphors are always either pronouns or reflexives:

- (49) a. Fred_i defended himself_i better than the lawyer_j defended himself_j;
 b. Fred_i defended himself_i better than the lawyer_j defended him_j;
 c. *Fred_i defended himself_i better than Barney_j defended ziji

2. The feature matrix corresponding to a LDA is possible in ellipsis, however. Since PF-deletion supercedes morphological insertion, the LDA does not violate FI.

- (50) a. Fred_i defended himself_i better than the lawyer_j ~~defended himself_j~~ (sloppy)
 b. Fred_i defended himself_i better than the lawyer_j ~~defended ziji~~ (strict)

3. Like LDAs in other languages, the English LDA is subject to blocking effects:

- (51) a. Fred_i defended himself_i better than Barney_j ~~defended himself_j~~ (sloppy)
 b. Fred_i defended himself_i better than Barney_j ~~defended ziji~~ (*strict)
- (52) a. Fred_i defended himself_i better than you_j ~~defended yourself_j~~ (sloppy)
 b. Fred_i defended himself_i better than you_j ~~defended ziji~~ (*strict)

3.4 Two caveats

It must be the case that a reflexive and a LDA count as identical for the purposes of deletion, but a reflexive/LDA and a pronoun do not.

- (53) a. Fred_i defended himself_i better than Barney_j ~~defended himself_j~~ (sloppy)
 b. Fred_i defended himself_i better than Barney_j ~~defended ziji~~ (*strict)
 c. Fred_i defended himself_i better than Barney_j ~~defended him_j~~ (strict)

Assume that reflexives and LDAs share a feature (e.g., [-referentially independent]_i, as in Reinhart and Reuland (1993)) that is not shared by pronouns ([+ref-indep]), and that the identity condition in ellipsis is sensitive to this distinction.

This explains why reflexives ordinarily only have sloppy interpretations:

- (54) Fred_i defended himself_i and Barney_j/the lawyer_j did too. (sloppy/*strict)
- (55) a. ... and Barney_j/the lawyer_j did ~~defend himself_j~~ too
 b. *... and Barney_j/the lawyer_j did ~~defend him_j~~ too

In addition, although a reflexive and a LDA count as identical for the purposes of deletion, it must not be the case that the feature content of the reflexive is a subset of the feature content of the LDA, as indicated in e.g. (56).

- (56) a. himself: [+3rd, +acc, -referentially dependent, +F]
 b. λ_j]: [+3rd, +acc, -referentially dependent]

If this were not the case, then the elsewhere condition on lexical insertion (Halle and Marantz 1993) would allow us to generate the LDA's feature structure and insert the reflexive generally, leading us to expect (erroneously) that long-distance binding of himself is possible:

- (57) Fred_i said that the lawyer_j defended himself_{j/*i}}

3.5 Stripping vs. VP-deletion

As we have already seen, comparatives with VP-deletion differ from comparatives with stripping in licensing sloppy readings of reflexives regardless of the referential status of the embedded subject.

- (58) *Comparative+Stripping*
 a. Fred defended himself better than Barney. (sloppy/*strict)
 b. Fred defended himself better than the court-appointed lawyer. (sloppy/strict)
- (59) *Comparative+VP-deletion*
 a. Fred defended himself better than Barney did. (sloppy/strict)
 b. Fred defended himself better than the court-appointed lawyer did. (sloppy/strict)

According to our analysis, a long-distance anaphor should be possible in examples like (59). Why then doesn't (59a) show the same blocking effect as (58a)?

- (60) *Fred_i defended himself_i better than Barney_j did [~~FP~~ ~~defended~~ ~~t_j~~]

The answer comes from the syntax of VP-deletion vs. stripping. Let us assume following Hestvik (1995) that the reflexive in the antecedent VP raises to a functional projection above VP, and binds into the adjunct clause, as shown in (61).

- (61) Fred_i [_{FP} himself_i [_{VP} [_{VP} defended t_j] better than Barney_j did [~~VP~~ ~~defended~~ ~~t_j~~]]]

Such structures involve ordinary variable binding, and are not subject to blocking effects.

Crucially, a Hestvik-style analysis is not possible in stripping because the elided and antecedent constituents are clausal, and so must include the reflexive:

- (62) Fred_i [_{FP} himself_i [_{VP} [_{VP} defended t_j] better than Barney_j [~~FP~~ ~~himself_j~~ [~~VP~~ ~~defended~~ ~~t_j~~]]]]]

The difference between comparative+stripping and comparative+VPD is due to independent syntactic distinctions between the two types of ellipsis constructions:

- In VP-deletion, strict readings can arise either by introduction of a LDA or by outside binding from the matrix clause, so no blocking effects should arise.
- In stripping, strict readings arise only by introduction of a LDA, so blocking effects should be observed.

3.6 Summary

The distribution of strict and sloppy interpretations of anaphors in comparative stripping indicate the presence of a long-distance anaphor in English.

This anaphor is possible only in ellipsis, because:

- English does not have a morphological instantiation of the feature matrix corresponding to the LDA, ruling out overt occurrences, but
- ellipsis eliminates the need for morphological insertion, licensing “covert” occurrences of the LDA — an otherwise unpronounceable object.

4 Minimal Structure in Gapping

Dickey and Kennedy 2002: ‘Minimal Structure in Gapping’, talk to be presented at the 76th Annual Meeting of the Linguistics Society of America, San Francisco, CA.

- Gapping, unlike (most) other forms of ellipsis (in particular pseudogapping), is restricted to occur in “conjoined” structures.
- This follows if gapped “clauses” are actually VPs (Johnson 1996).
- Gapped clauses must be VPs if:
 - inflectional heads are projected only to satisfy the morphological requirements of verbs, and
 - these requirements are not active in gapping, because no verbal material is pronounced, and
 - the grammar enforces a minimality requirement on syntactic representations (Economy of Representation?).

4.1 The Crucial Data

4.1.1 Gapping

Descriptively, gapping constructions are sentences in which a clausal constituent (usually assumed to be IP) is elided from the surface form AND at least one XP that normally occurs inside the elided constituent remains in the phonological representation.

- (63) [XP₁ ... XP_n [~~VP~~ ~~...t_n...~~]]

Related constructions: stripping, bare argument ellipsis, sluicing in covert *wh*-movement languages, multiple sluicing in single *wh*-movement languages, ...?

- (64) I suspect they have more to fear from us than we from them. (from *Mars Attacks*)
 a. ...than we₁ [from them]₂ [~~FP~~ ~~to fear~~ ~~t_j~~]
 b. *...than we from them have to fear.

- (65) At times, for longest hours, without a single hair, they stood far parted in the starlight; Ahab in his scuttle, the Parsee by the mainmast; but still fixedly gazing upon each other; *as if in the Parsee Ahab saw his forethrown shadow, in Ahab the Parsee his abandoned substance.* (from *Moby Dick*)

- a. ...[in Ahab] [the Parsee]₂ [his abandoned substance]₃ [~~the~~ ~~same~~ ~~as~~ ~~it~~]
- b. *...in Ahab the Parsee his abandoned substance saw.

- (66) The whole thing felt like the flight to Egypt, with *her* playing both the woman and the child, and me my namesake and the donkey. (From *Watermark*, by Joseph Brodsky)
- a. ... me₁ [my namesake and the donkey]₂ [~~the~~ ~~same~~ ~~as~~ ~~it~~]
- b. *... me my namesake and the donkey playing.

The traditional analysis of gapping is that the remnant XPs are scrambled out of the missing clausal constituent, which is then deleted under (LF) identity with some antecedent clause (see e.g. Sag 1976; Kuno 1981; Pesetsky 1982).

As we will see below, this analysis fails to explain the most celebrated property of gapping: its restriction to coordinate structures.

4.1.2 Pseudogapping

Gapping contrasts with pseudogapping, in which a tensed auxiliary is ‘left behind’.

- (67) It took me as long to second as it had Conrad to lead. (From ‘Out of Thin Air’, by David Roberts, *National Geographic Adventure* 1.3)
- a. ...as it had Conrad₁ [PRO to lead]₂ [~~the~~ ~~same~~ ~~as~~ ~~it~~]
- b. *...as it had Conrad to lead taken.

- (68) It took me as long to climb the face as it had Conrad.
- a. ...as it had [~~the~~ ~~same~~ ~~as~~ ~~it~~ had] ~~the~~ ~~face~~]
- b. *...as it had taken to climb the face Conrad.

Most researchers have analyzed pseudogapping as a form of VP-deletion (see e.g. Kuno 1981; Lasnik 1999; Jayaseelan 1990).

Although its distribution is not quite as free as VP-deletion (see Sag 1976; Levin 1986 for relevant discussion), it is more similar to VPD than to gapping.

Pseudogapping thus provides a particularly good point of comparison for gapping, since it is similar in its ‘remnant structure’ (typically two remnants) but different in its ‘clause structure’ (it expresses tense/agreement in the auxiliary).

4.1.3 The Coordination Constraint

Gapping has a number of mysterious properties, but the most interesting is that it is restricted to apply only across a relatively small number of sentential connectives, which include the coordinator ‘and’ and the comparative markers ‘than/as’, but not clausal subordinators like ‘because’, ‘though’, ‘while’, etc.

- (69) a. Kim ate nattoo, and Lee, rice.
b. Kim ate nattoo more often than Lee, rice.

- (70) a. *Kim ate nattoo because Lee, rice.
b. *Kim ate nattoo while Lee, rice.

Gapping differs from pseudogapping in this respect, as shown by the following examples. If anything, pseudogapping is *better* in subordinate structures (Levin 1986).

- (71) a. Kim ate nattoo and Lee did rice.
b. Kim ate nattoo more often than she did rice.

- (72) a. Kim ate nattoo because Lee did rice.
b. Kim ate nattoo, although she didn’t rice.

Our question

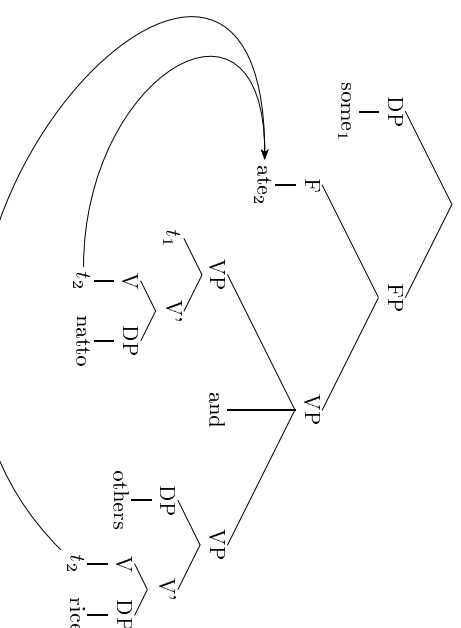
What is responsible for the coordination constraint?

4.2 Gapping Targets VPs

4.2.1 Johnson’s Across-the-Board Analysis

The only analysis of gapping that solves the coordination constraint is the one developed by Kyle Johnson (Johnson 1996), who reanalyzes gapping as across-the-board movement of a verb or verbal phrase.

- (73) a. Some ate nattoo, and others rice.
b.



Examples like the comparative in (64) are a bit trickier, since they require across the board movement of VPs, rather than simple verbs (because of the size of the gap). (They also require a conjunction-analysis of the comparative clause, an issue of some contention; see Lechner 2000 for recent discussion.)

- The strength of the ATB analysis is that it explains the coordination constraint in an elegant way (see Johnson 1996 for full discussion) — essentially by denying that gapping involves ellipsis at all!

Johnson provides several pieces of independent evidence that gapping involves VP conjunction.

Scope of clausal negation (74) has only the reading in (74a), not the reading in (74b).

- (74) We can't eat caviar and him beans!
 a. $\neg \diamond [ue\ eat\ caviar \wedge him\ eat\ beans]$
 b. $*[\neg \diamond we\ eat\ caviar] \wedge [\neg \diamond him\ eat\ beans]$

This follows if (74) has the structure in (75a) but not if it involves clausal ellipsis, as in (75b).

- (75) a. We can't eat₁ [vp [vp t₁ caviar] and [vp him t₁ beans]]
 b. [ip We can't eat caviar] and [ip him₁ [ip beans₂ [~~ip t₁ can't eat t₂]]]]~~

Variable binding A quantified subject in the antecedent clause can bind into the gapped clause, but not into a subsequent non-gapped clause.

- (76) Not every girl₁ ate a green banana and her₁ mother a ripe one.
 (77) *Not every girl₁ ate a green banana and her₁ mother ate a ripe one.

This follows if (76) involves coordinated VPs and (77) involves coordinated IPs: only in the former will the c-command restriction on variable binding be met.

Complementizers Gapping is possible in embedded clauses only if the gapped clause is not introduced by a complementizer.

- (78) Lee said that Kim bought a Honda and Pat a BMW.
 (79) *Lee said that Kim bought a Honda and that Pat a BMW.

This contrast follows if the gapped clause is a conjoined VP. Although the ungrammaticality of (79) is consistent with the standard analysis, it is not clear why gapping should be impossible in cases of CP (vs. IP) conjunction.

4.3 Left Branch Remnants

Although Johnson-style ATB analysis derives the coordination constraint, and appears to be supported by the data presented in the previous section, it faces an empirical challenge from examples involving attributive AP remnants, such as those in (80), which are due to Coppock 2001.

- (80) a. I make too strong an espresso, and Fred, too weak.
 b. Mary wrote too long a paper, and Suzy, too short.
 c. The professor gave too hard an assignment, and the TA, too easy.
 (81) a. *I make too strong an espresso, and Fred makes too weak.
 b. *Mary wrote too long a paper, and Suzy wrote too short.
 c. *The professor gave too hard an assignment, and the TA gave too easy.

These are not derivable in Johnson's analysis, because they require the direct object to be left inside the ellipsis site.

- (82) I make too strong an espresso and [ip Fred₁ [ip [ap too weak]₂ [~~ip t₁ made [ip ~~am t₂ espresso~~]]]]~~

4.4 Gapped "Clauses" are VPs

Coppock 2001 observes that all of Johnson's observations are consistent with a deletion analysis of gapping as long as deletion targets VP. On this view, the structures of (83) and (84) are as in (83a) and (84a), not as in (83b) and (84b).

- (83) We can't eat caviar and him beans.
 a. We can't [vp [vp eat caviar] and [vp him₁ [vp beans₂ [~~ip t₁ can't t₂]]]]
 b. * [ip We can't eat caviar] and [ip him₁ [ip beans₂ [~~ip t₁ can't t₂]]]]~~~~

- (84) They have more to fear from us than we from them.
 a. They [vp [vp have more to fear from us] than [vp we₁ [vp [from them]₂ [~~vp t₁ have to fear t₂]]]]]
 b. * [ip They have more to fear from us] than [ip we₁ [ip [from them]₂ [~~ip t₁ have to fear t₂]]]]~~~~

This proposal also explains why gapping is possible in comparatives: *than* can be followed by a VP.

- (85) I would rather read a novel than write one.

Coppock's point, then, is that Johnson is right about gapping targeting VPs and involving VP conjunction, but wrong about ATB movement being involved.

4.5 Minimal Structure in Ellipsis

We now have a new puzzle: why must gapped clauses be VPs???

The "must" is crucial here. If an IP analysis of gapped clauses is *possible*, then the conjunction constraint becomes a mystery again: IP-selecting subordinators should force IP structure in gapping.

- (86) a. *Kim ate nattoo because [vp Lee [vp rice [~~ip t₁ ate t₂]]]]
 b. Kim ate nattoo because [ip Lee [ip rice [~~ip t₁ ate t₂]]]]~~~~

We suggest that the VP-restriction on gapping is due to a general constraint on structure building that requires minimization of syntactic representations.

Our initial assumptions:

- Inflectional projections license ("check") inflectional features on lexical heads; unlicensed ("unchecked") inflectional features are uninterpretable at the PF interface (Chomsky 1995a).
- Deleted constituents are not subject to PF-constraints (Kennedy and Merchant 2000; Kennedy and Lidz 2001; Merchant 2001, etc.).

A consequence of these two assumptions is that inflectional projections are unnecessary when all verbal material is deleted.

A stronger view Inflectional projections are not allowed if they are unnecessary. We will take the position that the strong conclusion is the correct one.

- (87) *Minimal Structure in Ellipsis*
In ellipsis constructions, only as much structure as is required to satisfy the interface conditions is posited in the ellipsis site.

This hypothesis builds on ideas in Thompson 2000, and represents an intermediate position between the two “poles” usually encountered in ellipsis research:

- *The Deletion Analysis*: Elided constituents have the full syntactic structure associated with their antecedents — they are completely syntactically parallel to their overt counterparts.
- *The Recovery Analysis*: Elided constituents have no syntactic structure at all — ellipsis involves the recovery of meaning only.

We maintain the core claim of the Deletion Analysis — ellipsis involves syntactic representation — but we allow for the possibility that the syntactic structures found in ellipsis may be “deficient” — *because they can be!*

4.6 Psycholinguistic Evidence for Minimal Structure

If we are on the right track, then we should find differences in the processing of gapping vs. pseudogapping constructions.

- Since gapping eliminates all verbal material from the PF-representation, no inflectional projections are required, and (by hypothesis) no inflectional projections are allowed.
- Since pseudogapping retains an inflected auxiliary verb in the PF-representation, the usual array of inflectional projections are required.

Gapped clauses should therefore have less syntactic structure than pseudogapped clauses:

- (88) a. Kim ate *nattoo* and Lee, rice.
b. ... and [VP Lee₁ [~~VP-*ate* *rice*]~~]]
- (89) a. Kim ate *nattoo* and Lee did rice.
b. ... and [P Lee₁ did [VP [~~VP-*ate* *rice*]~~]]

Can we find psycholinguistic evidence for this difference in amount of structure even when it is unpronounced???

- Use **sentence matching** technique (Freedman and Forster 1985; Forster 1987) to find out....

4.7 Summary

Some conclusions about the syntactic structure of gapping constructions:

- Gapped clauses are VPs, and gapping involves conjunction of VPs (Johnson 1996).
- Experimental data from a sentence matching task supports this position.
- Coppock (2001) provides linguistic arguments that gapping involves ellipsis, rather than across-the-board movement, but the experimental data doesn't clearly decide between the two approaches. (*Or does it...?*)

The more interesting issue: why must gapped clauses be VPs, and not IPs (if gapping involves ellipsis rather than movement)?

- Only as much (PF) structure as is required by overt lexical items is built.
- Ellipsis thus licenses “deficient” — i.e., otherwise unpronounceable — syntactic representations, because unpronounced (deleted) lexical material has no PF licensing requirements.

Since gapping constructions (by definition) have no inflectional morphology, they should also have no inflectional syntax.

5 Conclusion

One view of the relation between syntax and morphology (REFS):

- (90) *The Late Insertion Model*
The set of feature structures generated by the syntax (the ‘computational system’) is (or may be) a superset of the set of feature structures that can be pronounced, because not every well-formed syntactic representation has a corresponding morphological realization.

This position leads to the following claim about ellipsis:

- (91) *Ellipsis and Syntactic Representation*
If ellipsis involves deletion of syntactic structure, then:
- i. Elided constituents should be sensitive to syntactic constraints in general.
 - ii. However, since ellipsis (by definition) does not require pronunciation of the “missing” structure, elided constituents should be insensitive to syntactic constraints that derive from morphophonological properties of lexical items.

We must therefore look to ellipsis constructions to get a complete inventory of the set of well-formed syntactic objects in any language, since there may be some structures that are grammatical only if they do not have to be pronounced.

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