

When Variable Re-binding Bleeds Antecedent-Contained Deletion

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1 Introduction

1.1 The Empirical Domain

- **vP-Ellipsis.** We are interested broadly in vP-Ellipsis (vPE), whereby some vP can be elided (vPE) under identity with another vP elsewhere in the discourse (vPA).

(1) I [_{vPA} like documentaries] and Kim also does [_{vPE} ~~like documentaries~~].

I will treat the ellipsis site as containing a fully formed syntactic structure at the point of interpretation. I don't see that we will be required to choose between theories asserting that the elided structure is:

- always present but unpronounced (e.g., Ross 1969, Merchant 2001) or
- supplied by LF-copying (e.g., Chung et al. 1995, Lobeck 1995).

- **Elided Anaphora.** Our specific interest is in the interpretation of pronominal forms in the ellipsis site (2). Ross (1967) observes that an elided pronoun can receive either a *strict* interpretation (2a) or a *sloppy* interpretation (2b).

(2) Kim₁ likes her₁ photos and you₂ also do Δ.
 a. *strict* : Δ = like **her**₁ photos
 b. *sloppy* : Δ = like **your**₂ photos

1.2 The Puzzle

- **Antecedent-Contained Deletion.** Our particular interest is in Antecedent-Contained Deletion (ACD). This is case of vPE wherein the vPE is contained inside vPA.

(3) Kim [_{vPA} watched the documentary that I did [_{vPE} ~~watch x~~]].

- **The Paradigm.** We will observe that sloppy pronouns are more restricted in the context of ACD than in standard vPE. (See Appendix A for available sloppy pronouns.)

- (4) Kim₁ wants her₁ goat to win the prize and you₂ also do Δ.
 a. *strict* : Δ = want **her**₁ goat to win the prize
 b. *sloppy* : Δ = want **your**₂ goat to win the prize
- (5) Kim₁ wants her₁ goat to win the prize that you₂ (also) do Δ.
 a. *strict* : Δ = want **her**₁ goat to win
 b. * *sloppy* : Δ = want **your**₂ goat to win

1.3 Outlook

- **The missing sloppy reading is a function of being in an ACD configuration.**
- **The domain over which the identity condition on ellipsis is evaluated (*Parallelism Domain*; PD) is potentially larger than the ellipsis site (Rooth 1992).**
- **The variable re-binding responsible for sloppy anaphora requires extending the PD to include the binder (Takahashi and Fox 2005).**
- **We will capitalize on the fact that, as the PD is extended, the antecedent constituent (AC) for the PD must also be extended to match.**
- **The Quantifier Raising (QR) operation that licenses ACD (e.g., Fiengo and May 1994) may not be able to escape the AC in the context of re-binding.**

(6) *strict*
 ✓ Kim DP [_{AC} wants her₇ goat to win x₁]
 the prize that you do [_{PD} want her₇ goat to win x_T]

(7) *sloppy*
 * Kim [_{AC} λ3 DP wants her₃ goat to win x₁]
 the prize that you [_{PD} λ2 do want your₂ goat to win x_T]

2 Sloppy Anaphora in Antecedent-Contained Deletions

2.1 Sloppy Pronouns Restricted in ACD

- **Widespread Absence of Sloppy Pronouns.** In each case below, the elided pronoun could receive a strict interpretation, but is ungrammatical on a sloppy interpretation. The contrasts are intended to show that a sloppy anaphor re-emerges in coordination.

(8) Raising-to-Object

- a. * Kim asked her students to read
[DP the book that you did \langle ~~expect your students to read e~~ \rangle].
- b. Kim asked her students to read the book and
you also did \langle ~~expect your students to read the book~~ \rangle .

(9) Object Control

- a. * I asked my grandmother to make
[DP a dessert that you did \langle ~~ask your grandmother to make e~~ \rangle].
- b. I asked my grandmother to make a dessert and
you also did \langle ~~ask your grandmother to make a dessert~~ \rangle .

(10) Subject Control

- a. * Bob promised his kids to read
[DP the story that I did \langle ~~promise my kids to read e~~ \rangle].
- b. Bob promised his kids to read the story and
and I also did \langle ~~promise my kids to read the story~~ \rangle .

(11) Small Clause

- a. * Sue watched her brother touch
[DP every cookie that you did \langle ~~watch your brother touch e~~ \rangle].
- b. Sue watched her brother touch every cookie and
you also did \langle ~~watch your brother touch every cookie~~ \rangle .

(12) Embedded Finite Clause

- a. * Tim thinks his sister wrote
[DP every song that you do \langle ~~think your sister wrote~~ \rangle].
- b. Tim thinks his sister wrote every song and
you also do \langle ~~think your sister wrote~~ \rangle .

- **Sloppy Pronouns Absent from Objects.** Just to be sure, this isn't an issue with embedded subjects. Objects both embedded and not embedded present the same effect.

- (13) a. * Kim expects [DP everyone you do \langle ~~expect to read your paper~~ \rangle]
to read her paper.
- b. Kim expects everyone to read her paper and
you also do \langle ~~expect to read your paper~~ \rangle .
- (14) a. * I gave my mother [DP every photo that you did \langle ~~give your mother~~ \rangle].
- b. I gave my mother every photo and
you also did \langle ~~give your mother every photo~~ \rangle .

2.2 Considering Discourse Coherence

- **Reflexives: Similar but Different.** There is a familiar and marginally similar pattern involving the strict reading of reflexives.

Reflexives resist a strict interpretation in coordination configurations (15). (See Williams 1977, Partee and Bach 1984, Hestvik 1995, but cf. Sag 1976, Dalrymple 1991, Kitagawa 1991, Fiengo and May 1994, Buring 2005, Ahn 2011).

- (15) Kim₁ likes herself₁ and you₂ also do Δ .
- a. * *strict* : Δ = like **her**₁ photos
- b. *sloppy* : Δ = like **yourself**₂ photos

The strict interpretation is readily available in subordination structures (16).

- (16) Kim₁ likes herself₁ because you₂ do Δ .
- a. *strict* : Δ = like **her**₁ photos
- b. *sloppy* : Δ = like **yourself**₂ photos

– *A Syntactic Account.* A typical proposal is that the reflexive can take scope over the subordination but not over the coordination (Hestvik 1995).

- (17) Kim₁ [herself₁ [likes x₁] [because you do [like x₁]]]

- (18) * [Kim₁ [herself₁ [likes x₁]]] and [you do [herself₁ [like x₁]]]

- *A Hybrid Account.* Kehler (2000) provides an account that is sensitive to discourse coherence relations.

Coordination configurations represent a type of *Resemblance* relation which requires syntactic identity between the elided constituent and its antecedent. Resolving the ellipsis site with a reflexive forces a sloppy reading.

Because-clauses represent a type of *Cause-Effect* relation which requires identity between the propositional content of the elided constituent and its antecedent. A strict or sloppy becomes possible as syntax is ignored.

- **The Difference.** First, it is the *sloppy* interpretation that goes missing in ACD configurations while both readings are readily available in coordination configurations.

Second, the availability of the relevant sloppy interpretation does not obviously rely on the type of discourse coherence relations proposed by Kehler (2000); both readings remain readily available in *Resemblance* and *Cause-Effect* relations (19).

- (19) Kim₁ expects her₁ kids to read the book because you₂ do Δ.
- strict* : Δ = expect **her**₁ kids to read the book
 - sloppy* : Δ = expect **your**₂ kids to read the book

The Puzzle: The interpretation of an elided pronoun is a function of appearing in an ACD configurations, such that sloppy interpretation are restricted in ACD configurations.

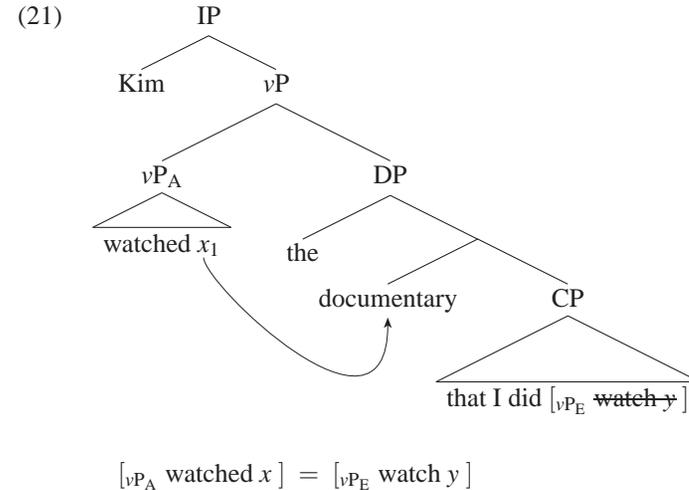
3 Some Groundwork

3.1 Antecedent-Contained Deletion

- **No Identity under Containment.** The containment relationship in ACD configurations means that the elided vP_E does not obviously satisfy any kind of identity requirement with the antecedent vP_A.

- (20) Kim [vP_A watched the documentary that I did [vP_E ~~watch x~~]].
- [vP_A watched the documentary that I watch x] ≠ [vP_E watch x]

- **Quantifier Raising.** A typical way to account for this is through an application of Quantifier Raising (QR) that moves the host of the ACD site out of the antecedent vP (May 1985, Larson and May 1990, Fiengo and May 1994, Fox 2002).



3.2 Sloppy Pronouns

- **Derived VPs.** The basis for our the analysis of sloppy anaphora comes from Sag (1976) and Williams (1977) which, following Partee (1973), interprets the elided constituent as a λ-expression.

The strict reading emerges when the elided pronoun is referential. The sloppy reading emerges when the elided pronoun is bound.

- (22) Kim₁ likes her₁ photos and you₂ also do Δ.
- strict* : [[Δ]]^{C,g} = λx.x like y's photos
 - sloppy* : [[Δ]]^{C,g} = λx.x likes x's photos

- **A Prediction.** This analysis predicts that sloppy readings will only appear as a result of internal binding. It should not be possible for a variable to be *re-bound* (following Takahashi and Fox 2005) from outside the ellipsis site.

The idea is that, from the point of view of the identity requirement on ellipsis, the variables in vP_A and vP_E will be viewed as free variables that would necessarily carry different indices. This simply isn't something that ellipsis allows:

(23) *I [vP_A kissed him₁] and Kim also did [vP_E ~~kiss him₂~~].

This appears to be correct as the availability of the sloppy reading appears to rely on which DP saturates the ellipsis site, which is an effect of the size of the ellipsis site.

(24) Tim₁ [vP_A said I kissed him₁] and Kim₂ also did Δ

a. *strict* : Δ = say I kissed him₁

b. *sloppy* : Δ = say I kissed her₂

(25) Tim₁ said I [vP_A kissed him₁] and Kim₂ also said I did Δ

a. *strict* : Δ = kiss him₁

b. **sloppy* : Δ = kissed her₂

Subsequent research has shown, however, that it is possible for variables to be bound by operators well outside the vP (e.g., Evans 1988).

(26) Pizza₁ I [vP_A like x_1] but calzones₂ I don't [vP_E ~~like y_2~~].

3.3 Parallelism Domains and Re-binding

- **Parallelism Domains.** I will adopt an extension to the Sag-Williams account proposed by Takahashi and Fox (2005) that adopts from Rooth (1992) a condition like in (27).

(27) For ellipsis of EC [elided constituent] to be licensed, there must exist a constituent (PD [parallelism domain]), which reflexively dominates EC, and satisfies *Parallelism*.

Parallelism for Takahashi and Fox (2005) is the condition that I have been referring to simply as identity. They formulate it as follows:

(28) *Parallelism*

PD satisfies the parallelism condition if PD is semantically identical to another constituent AC [antecedent constituent], modulo focus-marked constituents.

As seen in (29), the PD may need to be only as big as the EC.

(29) You [AC like calzones] but I don't [PD $\langle EC$ ~~like calzones~~ \rangle].

Given re-binding (30), the PD must be extended to include the binder for the elided variable. Only in this way can a parallel AC be identified for the PD (cf. (23)).

(30) Pizza₁ [AC $\lambda 1$ I like x_1] but calzones₂ [PD $\lambda 2$ I don't $\langle EC$ ~~like y_2~~ \rangle].

- **The Technology at Work.** To account for the paradigm in (24) and (25), Takahashi and Fox (2005) add to the technology above the following condition on ellipsis, which is adapted from Merchant (2008).

(31) *MaxElide*

Elide the biggest deletable constituent reflexively dominated by the PD.

- *Strict Interpretation.* When no re-binding is involved, there will be a choice to define the PD in the matrix clause (32a) or embedded clause (32b). Based on the choice of PD, MaxElide will require deletion of different constituents.

(32) a. Tim₁ [AC said I kissed him₁] and
Kim₂ did [PD $\langle EC$ ~~say I kissed him₁~~ \rangle] too.

b. Tim₁ said I [AC kissed him₁] and
Kim₂ said I did [PD $\langle EC$ ~~kiss him₁~~ \rangle] too.

- *Sloppy Interpretation.* When the elided pronoun is rebound, the PD must be defined in the matrix clause so as to include the binder index under *Kim*. MaxElide favors ellipsis of the matrix vP .

(33) a. Tim₁ [AC $\lambda 1$ said I kissed him₁] and
Kim₂ [PD $\lambda 2$ did $\langle EC$ ~~say I kissed her₂~~ \rangle] too.

b. *Tim₁ [AC $\lambda 1$ said I kissed him₁] and
Kim₂ [PD $\lambda 2$ said I did $\langle EC$ ~~kiss her₂~~ \rangle] too.

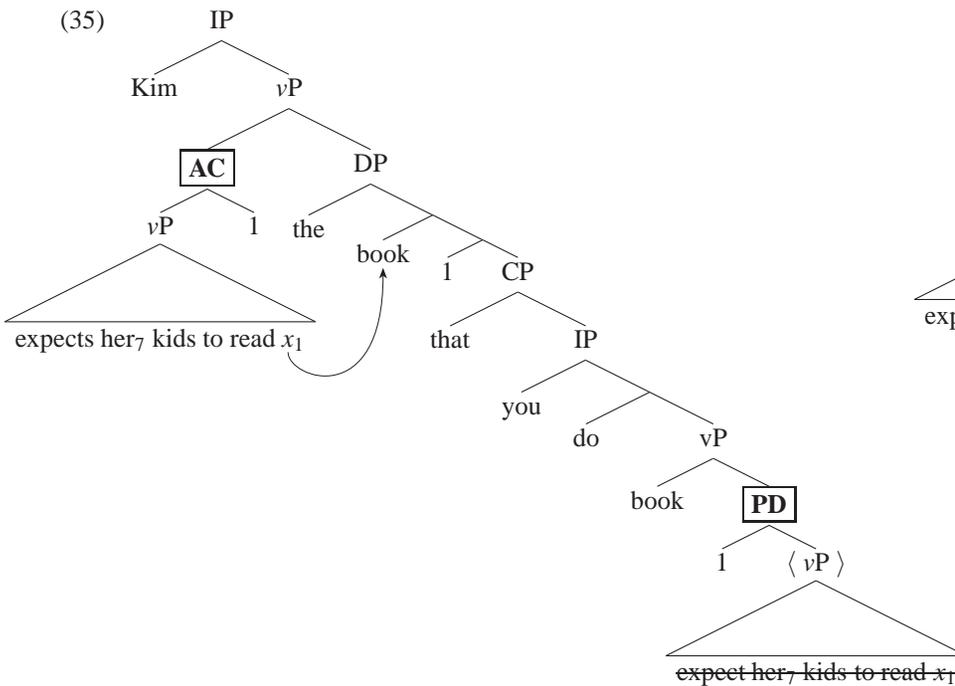
We will capitalize on the fact that, as the PD extends to accommodate re-binding, the AC must similarly be extended to satisfy Parallelism.

4 Bleeding ACD with Re-binding

4.1 Generating the Strict Reading in ACD

- **Strict Interpretation under ACD.** Let us start by considering the grammatical ACD configuration in (34) with a strict interpretation of the elided pronoun.

(34) ✓ Kim expects her₇ kids to read
 [DP the book that you do \langle expect her₇ kids to read e \rangle].

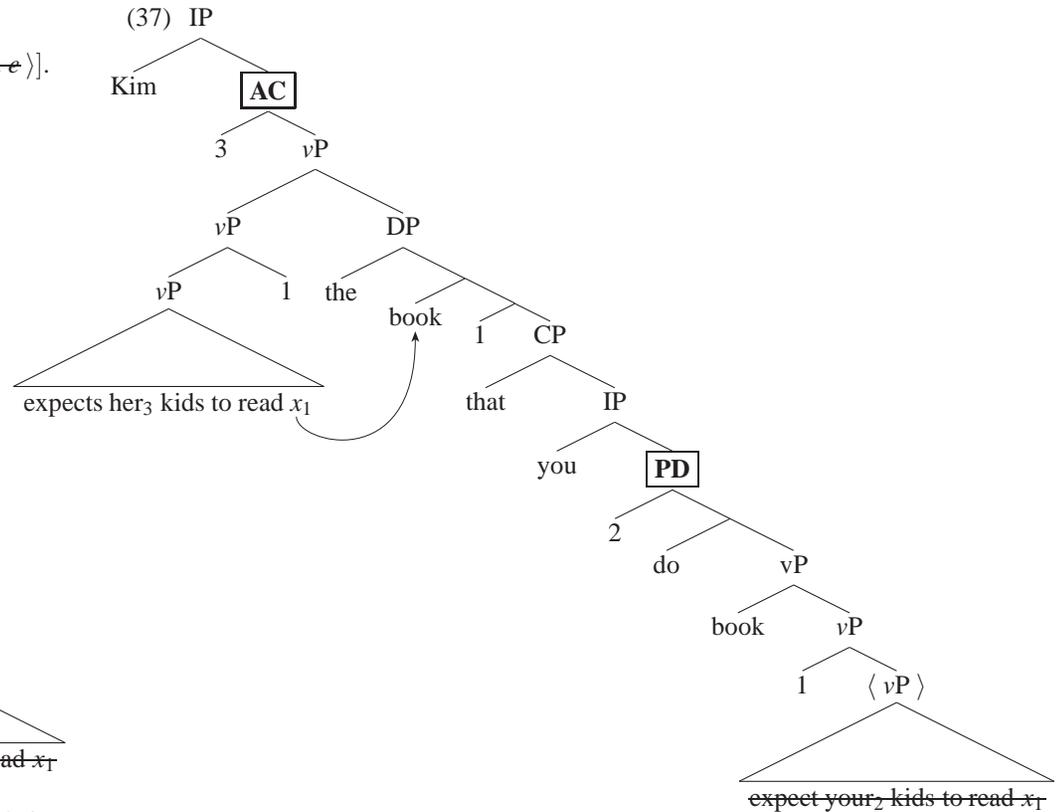


- *Defining the PD.* The elided pronoun is referential, so the only bound variable in the EC is the trace of the RC-head *book*. I assert this variable is re-bound from an intermediate trace at the edge of vP, which also defines the PD.
- *Defining the AC.* The AC is defined by a parallel binder index introduced by QR at the edge of the matrix vP.
- *Parallelism.* Because the AC does not contain the PD, Parallelism can be established and ellipsis of the relative clause vP is licensed.

4.2 Blocking the Sloppy Reading in ACD

- **No Sloppy Reading under ACD.** The unavailable sloppy interpretation is provided again in (36).

(36) * Kim₃ expects her₃ kids to read
 [DP the book that you₂ do \langle expect your₂ kids to read e \rangle].

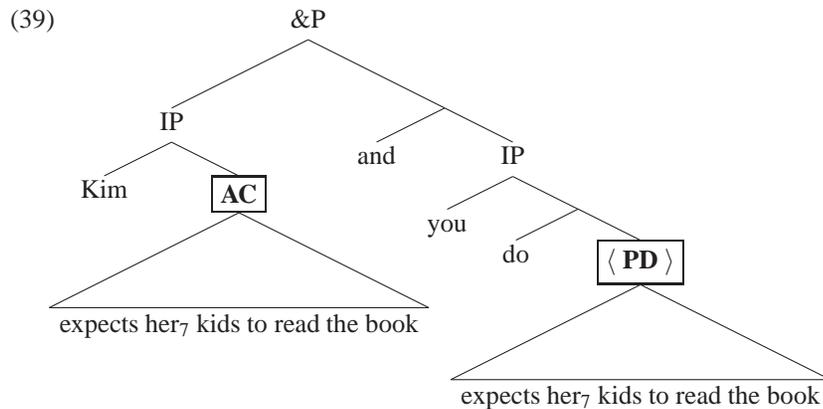


- *Defining the PD.* The pronoun *your* in the EC is rebound by *you* in this example. This requires the PD to be extended to contain the binder $\lambda 2$ under *you*.
- *Defining the AC.* The AC is defined by the parallel binder index $\lambda 3$ under the matrix subject *Kim*.
- *No Parallelism.* Because the matching AC contains the PD, Parallelism cannot be established and ellipsis of the relative clause vP cannot be licensed.

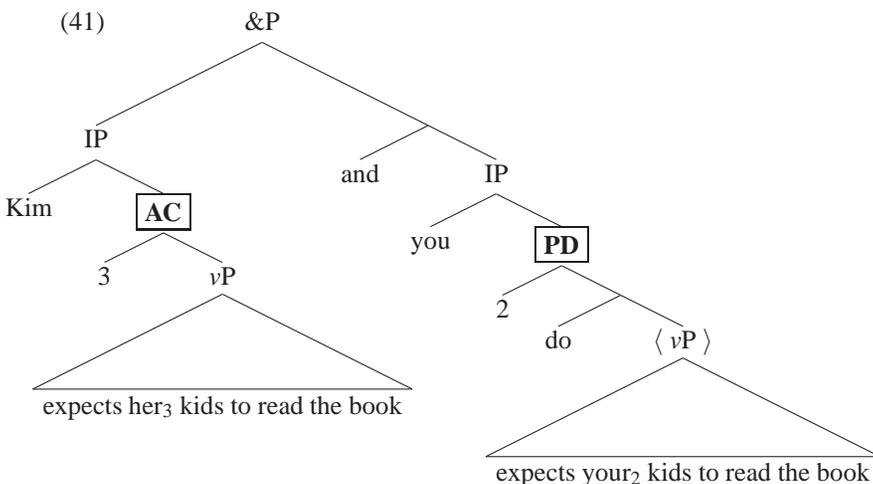
4.3 Coordination Configurations

- **AC and PD Don't Interact.** Both strict and sloppy readings are available in coordination because extending the AC cannot result in antecedent-containmentment.

(38) ✓ Kim expects her₇ kids to read the book and
 you also do \langle expect her₇ kids to read the book \rangle].

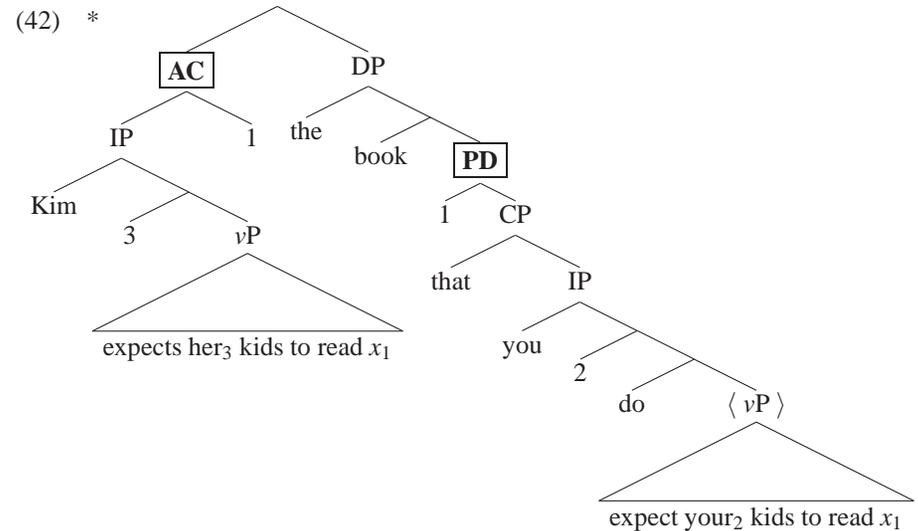


(40) ✓ Kim₃ expects her₃ kids to read the book and
 you₂ also do \langle expect your₂ kids to read the book \rangle].



5 Feeding ACD with Additional Movement

- **A Necessarily Unavailable LF.** This analysis relies on *the book...* being unable to out-scope the subject as shown in the hypothetical LF representation in (42); the PD would escape the extended AC and allow Parallelism to be established.



- **An Open Puzzle.** The unavailability of (42) is reminiscent of the observations that motivate *Scope Economy*: QR does not cross the subject under general circumstances (Fox 1995, 2000, Reinhart 1995, 2006).

However, it is curious from the view of more general economy considerations that (42) is ruled out despite generating an otherwise unavailable semantic interpretation.

Exceptional covert movement of the type employed in resolving ACD is not licensed purely for the purpose of escaping an extended AC.

This suggests to me that the QR operation used for ACD is subject purely to syntactic constraints and cannot access the computation of Parallelism (e.g., Fox 2000).

- **A Prediction of the Analysis.** Somewhat independent of the puzzle above, we predict that sloppy pronouns will become available if we can motivate the exceptional step of movement that generates a structure like (42).

5.1 Inverse-Scope

- **Inverse-Scope Readings.** Observe first that inverse-scope between the object of a non-finite complement clause and the matrix subject is possible on a bound interpretation of a pronoun in the embedded subject (43).

(43) $\forall > \exists$
 A guard₁ expects his₁ kid to stand outside every building.
 ‘For every building x , there is a guard y such that y expects y ’s kid to stand outside x .’

- **Controlling for Scope Parallelism.** Koster-Moeller and Hackl (2008) observe a potential confound with our experiment: Scope Parallelism effects Fox (2000) are found in ACD configurations (44).

(44) a. $*\forall > \exists$
 A professor read every book that Mary did.
 ‘For every book x that Mary read x , a different professor read x .’
 b. $\forall > \exists$
 A professor read every book that a student did.
 ‘For every book x such that some professor read x , some student read x .’

(Koster-Moeller and Hackl 2008:302, (7))

- **Sloppy Pronouns under Inverse Scope.** Once we correct for these effects, the inverse-scope reading and the sloppy pronouns emerge relatively easily.

(45) A guard₁ expects his₁ kid to stand outside every building
 that a spy₂ does \langle_{EC} ~~expect her₂ kid to stand outside e~~ \rangle .

Compare this with an example that has not controlled for Scope Parallelism.

(46) $*A$ guard₁ expects his₁ kid to stand outside every building
 that you₂ do \langle_{EC} ~~expect your₂ kid to stand outside e~~ \rangle .

5.2 Topicalization

- **Topicalization with Raising-to-Object.** A topicalization configuration like (47) below would generate a structure like (42) via overt movement, correcting for linearization.

(47) [_{DP} The book]₁, Kim WOULD expect her kids to read e_1 .

- **Sloppy Pronouns under Topicalization.** The example in (48) reveals that an elided pronoun in the ACD site hosted by the topicalized DP permits a sloppy interpretation.

(48) [The book that you₂ WOULDN’T \langle_{EC} ~~expect your₂ kids to read e~~ \rangle]₁,
 Kim₃ WOULD expect her₃ kids to read e_1 .

This supports the analysis presented in section 4 and suggests that the availability of a sloppy reading under inverse-scope is indeed the result of generating a structure like (42)

6 Conclusion

- **Sloppy readings of elided pronouns are more restricted in ACD configurations than in standard v PE configurations.**
- **The QR operation that licenses ACD (e.g., Fiengo and May 1994) may not be able to escape an extended AC that results in the context of re-binding (Rooth 1992, Takahashi and Fox 2005).**
- **Among the remaining puzzle is the observation that satisfying Parallelism is not on its own sufficient to license exceptional movement out of an extended AC.**
- **Providing some additional means to escape an extended AC, however, results in the availability of sloppy pronouns as predicted by the present analysis.**
- **The success of this analysis supports theories of ellipsis licensing that are at least in part sensitive to the syntactic environment of the ellipsis site.**

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Appendix: When Sloppy Pronouns Are Available

- **The Current Generalization.** The analysis in section 4 and the results of section 5 suggest the following generalization regarding the distribution of sloppy pronouns:

- (49) Let P_E be a pronoun elided with some VP_E and P_A be the corresponding pronoun in the antecedent VP_A . P_E cannot receive a sloppy interpretation if VP_E is interpreted in the scope of the binder for P_A .

- **Too Strong?** A closer inspection suggests that this generalization may be too strong.

On the present analysis, the only way the examples below wouldn't violate the generalization in (49) is if the adjuncts were adjoined above the subject.

(50) Pam₃ washes her₃ car
 [PP on [DP every day that you₂ do \langle EC ~~wash your₂ car on e~~ \rangle]].
 (Jeremy Hartman, p.c.)

(51) Bob₃ finished his₃ paper [PP before you₂ did \langle EC ~~finish your₂ paper~~ \rangle]].

We can preserve the basic analysis above (with some modifications) and the generalization in (49) if we assert that re-binding is taking place from a relatively low position within the ν P, perhaps the subjects base-position.

Thus, the elided pronouns are permitting sloppy interpretations in these examples by virtue of being generated above the base-position of the subject.

- **Ditransitive Constructions.** This conclusion is revealing for the following example of a ditransitive predicate in a prepositional-object frame.

(52) Oscar₁ introduced his₁ mother to [DP everyone
 that Max₂ did \langle introduce his₂ mother to e \rangle].
 (Fiengo and May 1994:240, (7))

On the basis of the generalization developed in (49), the PP-object is either generated above the base-position of the subject or has some other means of being interpreted above the base-position of the subject.

A Contrast with Double-Object Frames. This is supported by the observation that sloppy pronouns become unavailable once again in the double-object frame.

The following examples provide near minimal pairs comparing the PP-object frame in the (a) variants and the double-object frame in the (b) variants. The (b) variants are grammatical on the strict reading of the elided pronoun.

(53) a. Tim₃ sent his₃ photo to
 [DP everyone that you₂ did \langle send your₂ photo to e \rangle].
 b. *Tim₃ sent his₃ mother
 [DP every photo that you₂ did \langle send your₂ mother e \rangle].

(54) a. Sue₃ loaned her₃ books to
 [DP everyone that I₁ did \langle loan my₁ books to e \rangle].
 b. *Sue₃ loaned her₃ student
 [DP every book that I₁ did \langle loan my₁ student e \rangle].

We can understand this contrast, in the same way as above, as a the result of syntactic restrictions on QR.

For good measure the examples in (55) and (56) assure us that sloppy pronouns become possible in these constructions in the context of standard ν PE.

(55) Tim₃ sent his₃ mother every photo and
 you₂ also did \langle send your₂ mother every photo \rangle .
 (56) Sue₃ loaned her₃ student every book and
 I₁ also did \langle loan my₁ student every book \rangle .