Sloppy identity without ellipsis

Sloppy identity obtains under ellipsis even when the gender of an overt pronoun in the antecedent doesn't match the gender of the elided pronoun's binder. Two phenomena that have been hypothesized to derive from ellipsis, Across-the-Board movement and Right Node Raising, do not have this property: sloppy identity can obtain under ATB and RNR, but the form of the overt pronoun must match the gender of all binders. In this paper, I develop a novel way of getting sloppy identity, which I explicate with RNR. The account derives the contrast between ellipsis and RNR with regard to gender.

Keywords: pronouns, binding, sloppy identity, ellipsis, multidominance, Right Node Raising

1 Introduction

Ellipsis contrasts with Right Node Raising (RNR) and Across-the-Board (ATB) movement in the domain of bound variable anaphora. All three phenomena license sloppy interpretations of singular pronouns (1), but only ATB and RNR require that the gender of that pronoun matches all binders (2).

(1) a. Mary_i [visits her_i mother $]_{\text{VP}}$, and Sue_j does $\triangle_{\text{VP}}$, too. (VPE)

$[\![\triangle_{\text{VP}}]\!] = [\lambda x$. visit x's mother$]$

b. It's [$\text{her}_{\text{i/j}}$ mother] that Mary_i visits and Sue_j avoids. (ATB)

c. Sue_i visits, and Mary_j avoids, $\text{her}_{\text{i/j}}$ mother. (RNR)

(2) a. Mary_i [visits her_i mother $]_{\text{VP}}$, and John_j does $\triangle_{\text{VP}}$, too. (VPE)

$[\![\triangle_{\text{VP}}]\!] = [\lambda x$. visit x's mother$]$

b. * It's [$\text{her}_{\text{i/j}}$ mother] that Mary_i visits and John_j avoids. (ATB)

c. * John_i visits, and Mary_j avoids, $\text{her}_{\text{i/j}}$ mother. (RNR)

In (2a), *her* is interpreted as a variable bound by *Mary*; the elided VP also contains a bound variable, one that resolves to John in spite of the gender mismatch between the spoken pronoun *her* and the expression that binds into the ellipsis site (*John*). Ellipsis, then, allows a GENDER MISMATCH between a spoken pronoun and the binder of a variable associated with that pronoun. However, gender mismatch prevents sloppiness not only under ATB (2b), as Nissenbaum (2000) observes, but also under RNR (2c). This holds irrespective of conjunct order, as (3) shows, and holds also regardless of whether the pronoun is feminine or masculine, as the reader may verify by putting *his* in place of *her* in (2b-c) and (3a-b).

(3) a. * It's [$\text{her}_{i/j}$ mother] that John_i avoids and Mary_j visits. (ATB)

b. * Mary_i avoids, and John_j visits, $\text{her}_{i/j}$ mother. (RNR)

These facts do not follow from elliptical treatments of ATB or RNR, since whatever derives the sloppiness of (2a) will predict (2b-c, 3a-b) to be licit. The goal of this paper is to develop a new way of getting sloppy identity, one that allows for sloppiness (1b-c) but derives the badness of (2b-c, 3a-b). The proposal, which I explicate with Right Node Raising, supplements rather than replaces existing accounts of sloppiness.

The paper is organized in the following way. In section 1.1, I argue against an elliptical account of RNR on the basis of the licensing conditions on sloppy pronouns (contra Hartmann 1998, 2000 and Ha 2008). Without recourse to an elliptical account, a different way to get sloppy identity is required. In 1.2 I introduce the main thesis, namely: if a single pronoun is allowed to have multiple binders, a new kind of sloppiness obtains, one that derives the contrast between (1b-c) and (2b-c, 3a-b). A multidominant syntax predicts this many-to-one relation from binders to variables, but introduces some complexity in the domain of quantification. Accordingly, the later portion of the paper is concerned with showing that the style of QR developed by Johnson and Fox (Johnson 2012, Fox and Johnson 2015) interfaces with multidominant binding in the appropriate way. In section 2 I provide background to that way of doing QR, and in section 3 I

bring binding and QR together by sketching an account of Right Node Raising that derives the gender match effect. Section 4 concludes.

1.1 Ellipsis is insufficient to characterize RNR sloppiness

Ellipsis licenses bound variable readings of pronouns. Such readings come about even when the gender of the overt pronoun only matches that of its own binder; thus (4b) is licit alongside (4a).[1] These sentences, and those to follow, have universally quantified subjects and existentially quantified objects. This provides a binding-independent way of ensuring that objects scope under their clause-mate subjects.

(4) a. Every girl$_{\text{i}}$ [loves some book of hers$_{\text{i}}$]$_{\text{VP}}$, and every woman$_{\text{j}}$ does $\triangle_{\text{VP}}$, too. (VPE)

$[\![\triangle_{\text{VP}}]\!] = [\ \lambda x\ .\ \exists y\ .\ x\text{'s-BOOK}(y)\ \&\ \text{LOVE}(y)(x)\ ]$

b. Every girl$_{\text{i}}$ [loves some book of hers$_{\text{i}}$]$_{\text{VP}}$, and every boy$_{\text{j}}$ does $\triangle_{\text{VP}}$, too. (VPE)

$[\![\triangle_{\text{VP}}]\!] = [\ \lambda x\ .\ \exists y\ .\ x\text{'s-BOOK}(y)\ \&\ \text{LOVE}(y)(x)\ ]$

If the VP were spoken in the ellipsis site of (4a) to yield the same meaning, it would have to contain a feminine pronoun: *love some book of hers*. By contrast, if the elided VP of (4b) were spoken, it would have to be spoken with the pronoun *his*. The key fact is that under ellipsis, sloppy identity is licensed regardless of whether the elided variable's binder – *every woman* in (4a), *every boy* in (4b) – matches the overt pronoun gender-wise.

Accordingly, all current theories of the phenomenon aim to capture the fact that ellipsis is licensed (in part) by an interpretational similarity between the elided expression and its antecedent, as well a particular kind of parallelism between the binders of any variables those expressions contain (Fiengo and May 1994), but not by strict morphological identity between the antecedent VP and the elided one. I won't invoke a particular theory of ellipsis in this paper, but simply note here that morphological mismatches of this sort should follow from whatever licensing conditions on antecedents the theory adopts.

Because these gender mismatches aren't tolerated by Right Node Raising's variety of

sloppiness, an elliptical account of RNR is too weak. The following contrast illustrates.

(5) a. Every girl$_{\text{i}}$ loves, and every woman$_{\text{j}}$ hates, some book of hers$_{\text{i/j}}$. (RNR)

b. * Every girl$_{\text{i}}$ loves, and every boy$_{\text{j}}$ hates, some book of hers$_{\text{i/j}}$. (RNR)

It'll be helpful to consider the meaning that (5a) has, since it is precisely the absence of that meaning that makes (5b) notable. On the indexing given, the only possible reading for (5a) is one where the universal quantifiers scope over *some book of hers*, the so-called PIVOT of the construction. (5a)'s truth conditions are given in (6).

(6) $[\ \forall x\ .\ \textsc{girl}(x) \rightarrow [\ \exists y\ .\ \textsc{book-of-}x(y)\ \&\ \textsc{loves}(y)(x)\ ]\ ]$ &

$[\ \forall x\ .\ \textsc{woman}(x) \rightarrow [\ \exists y\ .\ \textsc{book-of-}x(y)\ \&\ \textsc{hates}(y)(x)\ ]\ ]$

The truth of (5a) doesn't require there be a book with the property of being loved by every girl, nor does it require there be a book with the property of being hated by every woman. The pivot's denotation is present in each conjunct and scopes under that conjunct's subject, then, despite the fact that there's only one spoken expression with such a denotation.

An elliptical account of (5a) is possible where the object of the left conjunct is elided, yielding (7a) which gets spoken. QR would apply to the overt DP object and to the elided one; the output of those QR operations is (7b).

(7) a. Every girl loves $\triangle_{\text{DP}}$, and

every woman hates [some book of hers]$_{\text{DP}}$.

b. Every girl [λx . some book of x [λy . x loves y]], and

every woman [λx . some book of x [λy . x loves y]]

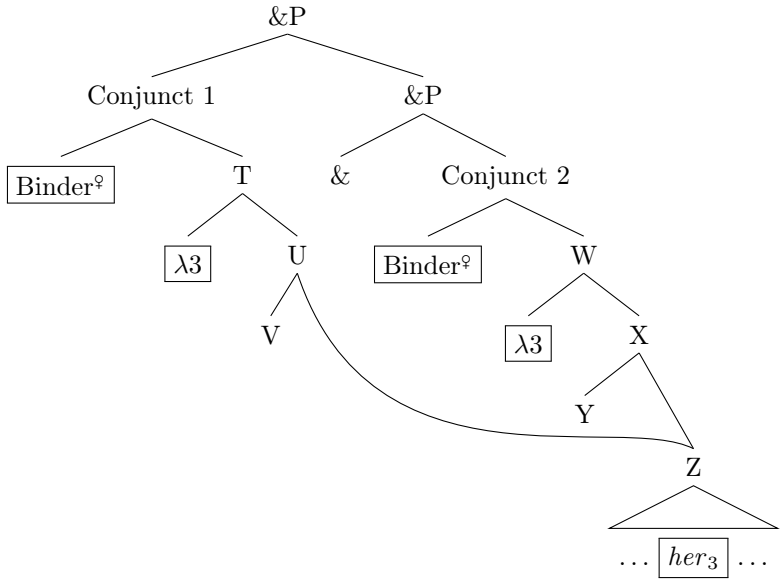
This account of (5a) would make sense of the many-to-one relation between interpreted and spoken expressions by letting the elided expression contribute to meaning. There are independent reasons why such an account of (5a), and of RNR more generally, is probably wrong. It lets ellipsis target DPs, but DPs can't ordinarily elide in English, nor can a variety of other expressions that can be

RNR'd (Johnson 2007). It doesn't have a handle on the Right Edge Effect, a condition that requires RNR pivots to be associated with positions at the right edge of each conjunct (Wilder 1999). We may add to these the following problem: an elliptical account of RNR does not derive the badness of (5b), which differs from (5a) in that the second clause's subject is *every boy* rather than *every woman*. There is a more restricted kind of sloppiness at play, one that requires a gender match between the spoken pronoun and all binders.

1.2 A new kind of sloppiness

In broad strokes, the present thesis is that a sloppy reading of (5a) arises because the pronoun *hers* is being bound by multiple expressions at once. I'll show how that effect arises for free if, as McCawley (1982), Wilder (1999), and others have argued, RNR pivots are dominated by all conjuncts. I provide a schematic illustration in (8). Node labels T-Z are arbitrary, but Z is the pivot of the construction. Z's immediate dominance by U and X is the crucial aspect of the hypothesis that RNR reduces to multidominance.

(8)



Note that the feminine binder in each clause is binding the pronoun the pivot contains. I'll show in section 3 that despite a pivot-internal pronoun introducing just one variable, if the pivot that

contains it semantically composes with more than one sister, that variable will contribute to the denotation of all conjuncts. If it finds a gender-compatible binder in each, a sloppy reading can come about. If not, a clash will arise in some conjunct. This will make (5b) ungrammatical for the same reason that *Every boy$_i$ loves some book of hers$_i$* is: *hers* cannot range over things that are boys. The broader implication is that there are two ways in which a spoken pronoun can be linked to the meaning of multiple binders: ellipsis lets you interpret a pronoun that isn't spoken, while multidominance lets you resolve a single pronoun to multiple binders in the right circumstances.

If (8) is to be representative of (5a), there's something to be explained beyond how the pronoun comes to be interpreted sloppily. It isn't just the denotation of (5a)'s pronoun that's represented multiple times in the sentence's truth conditions (=(6)). There are, in addition, two existential quantifiers to (5a)'s single instance of *some*, and two expressions in (6) that restrict existential quantification. If (5a) isn't derived by ellipsis, there needs to be a different way of associating *some book of hers* with two existential quantifiers that are restricted in a way determined by binding. Johnson (2012) and Fox and Johnson (2015) have a theory of QR that, when conjoined with a multidominant theory of RNR, will derive the truth conditions in (6) from (5a) for free. In the next section I provide background to their theory of QR before returning in section 3 to the contrast in (5).

2 Quantifier Raising

On the inverse-scope reading of *Some woman read every book*, *some woman* falls in the nuclear scope of the universal quantifier, though the sentence is spoken with *every book* in a position that doesn't give it that scope. Since syntactic movement already provides a way of relating two positions in a phrase marker, a natural move is to relate the spoken and interpreted positions of the quantified expression via movement, as May (1977, 1985) did. This is Quantifier Raising.

Theories of QR differ with regard to how movement is formalized. I'll assume that movement is a special instance of Merge, and will let the operation apply to non-root nodes:

Merge(α, β) is defined even when α is dominated by something.

From Johnson (2012) and Fox and Johnson (2015) I'll adopt the premise that the syntactic heads which supply quantificational denotations are distinct from the heads that get spoken as words like *every* and *some*, though these classes of expressions interact syntactically in some way. The exact way in which they interact differs slightly between the two papers, and between the first and second half of the latter. I'll put the contrasts aside, however, and present an implementation of the idea that's mostly faithful to their proposals.

We begin with universal quantification. Consider the entries in (9).[2] $Q_{\forall}$, a head of category Q, introduces quantification semantically. I'll assume this head never has a morphological exponent (but see Johnson 2012 for an alternative).

(9) a. $[\![Q_{\forall}]\!]^g = \lambda P_{\langle e,\, t\rangle}\ \lambda Q_{\langle e,\, t\rangle}\ .\ \forall x\ .\ [\ P(x) \rightarrow Q(x)\ ] = 1$

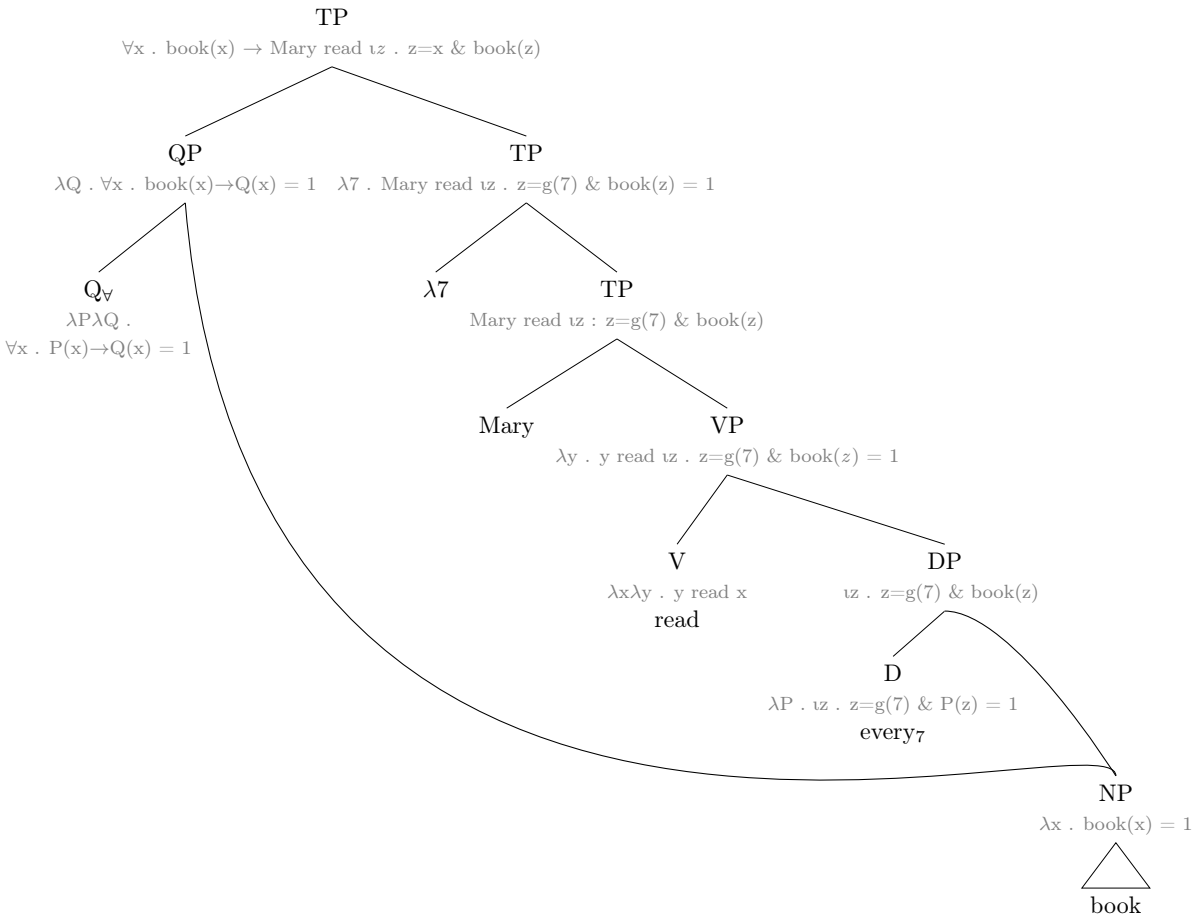
b. $[\![\text{every}_n]\!]^g = \lambda P_{\langle e,\, t\rangle}\ .\ \iota x\ .\ [\ x{=}g(n)\ \&\ P(x)\ ] = 1$

Though the first of these denotations is probably familiar, the second deserves some comment. The determiner *every* introduces an index and takes a predicative (NP) complement. Via Function Application, it composes with that complement and returns a definite description such that the variable bound by the ι-operator is identified with the individual the assignment function maps the index to, and such that the predicate holds of that variable. This part of the system, then, will let the nuclear scope of a quantifier contain a definite description that's restricted as a function of the predicate the NP contributes (this is equivalent to Fox's 1999, 2002 rule of Trace Conversion).

That predicate, however, is restricting more than the definite description. In a sentence like *Mary read every book*, the denotation of *book* must also play a role in restricting universal quantification. So this predicate has a special property: it restricts the definite description headed by *every*, and it restricts the quantifier denoted by $Q_{\forall}$. This is where letting Merge(α, β) be defined when α is dominated comes into play: the system lets the NP *book* be in both positions. Given that *every* is a determiner, that $Q_{\forall}$ provides a quantificational denotation, and that the NP

that restricts both occupies two positions, we end up with phrase markers like the following. For simplicity, *Mary* is generated in Spec, TP.

(10)



(10) delivers the kind of meaning a theory of QR should; the root is given an interpretation that can be paraphrased as "for all x such that x is a book, Mary read the z such that z is x, and z is a book". The fact that the NP *book* semantically composes with both of its sisters is harmless. Its composition with D simply has the effect of ensuring that the variable in the nuclear scope of the quantifier ranges over books (which *book*'s composition with Q forces anyway).[3]

The head that introduces existential quantification will be termed $Q_{\exists}$. For simplicity, I'll assume it denotes a quantifier over individuals rather than choice functions, but the latter

approach is not incompatible with the findings of the present paper. *Some* will be given a denotation identical to *every*; it denotes a function from predicates to definite descriptions.

(11) a. $[\![\text{Q}_{\exists}]\!]^g = \lambda \text{P}_{\langle \text{e, t} \rangle}\ \lambda \text{Q}_{\langle \text{e, t} \rangle}\ .\ \exists x\ .\ [\ \text{P}(x)\ \&\ \text{Q}(x)\ ] = 1$

b. $[\![\text{some}_n]\!]^g = \lambda \text{P}_{\langle \text{e, t} \rangle}\ .\ \iota x\ .\ [\ x{=}g(n)\ \&\ \text{P}(x)\ ] = 1$

Given that *every* and *some* are denotationally identical, something must explain their complementary distribution (*i.e.*, that *every* co-occurs exclusively with universal quantification, while *some* co-occurs exclusively with existential quantification). I'll assume that for licensing, *every* requires the index it introduces to be semantically bound by a quantifier phrase headed by $\text{Q}_{\forall}$, and that *some* requires its index to be bound by a phrase headed by $\text{Q}_{\exists}$. Nothing important hinges on this assumption, and different ways might be imagined of ensuring that *every* associates with $\text{Q}_{\forall}$ and *some* with $\text{Q}_{\exists}$.

The theory of QR summarized here offers two useful properties for the forthcoming analysis of RNR. First, an expression can occupy more than one position in a phrase marker: crucially, an NP can simultaneously restrict a quantifier and the definite description the quantifier binds into. Second, words like *every* and *some* have been divorced from quantificational denotations, which are supplied by different expressions. This will provide a way of understanding (5a)'s single instance of *some*, for instance, despite two existential quantifiers in the truth conditions.

3 Right Node Raising: sloppy binding and scope

The task in this section is to link together the multidominant theory of RNR (illustrated by (8), where the pivot is dominated by something in either conjunct) with those kinds of phrase markers that QR *à la* Fox and Johnson produces. When put together, a new kind of sloppiness falls out for free. I'll take (5a), repeated here as (12a), as an exemplar.

(12) a. Every girl$_{\text{i}}$ loves, and every woman$_{\text{j}}$ hates, some book of hers$_{\text{i/j}}$. (RNR)

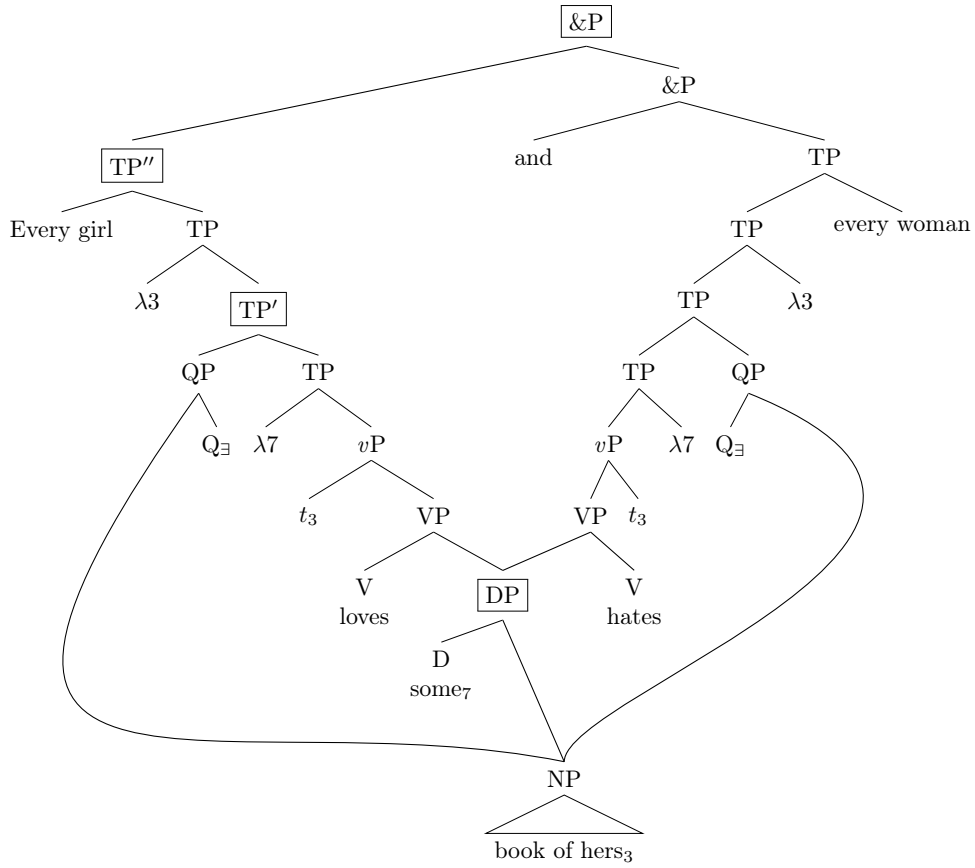
b. [$\forall x$. GIRL(x) $\rightarrow$ [$\exists y$. BOOK-OF-x(y) & LOVES(y)(x)]] &

[$\forall x$. WOMAN(x) $\rightarrow$ [$\exists y$. BOOK-OF-x(y) & HATES(y)(x)]]

Recall that the relation between (12a) and its truth conditions (12b) is a primary explanandum given that we can't avail ourselves of ellipsis in the derivation.

The solution kicks off with the idea that there are two $Q_{\exists}$ heads in (12a), one in each conjunct, such that both are restricted by same NP (*book of hers*) and both contain the same definite description in their scope (denoted by *some book of hers*). Consider the tree in (13a) below. For expositional reasons, this tree is simplified in the following respects. First, I don't offer node-by-node semantic composition, but illustrative denotations are given in (13b-e) for the boxed nodes. Second, the graph glosses over the movement of the subjects *every girl* and *every woman*. I'll assume these are generated in [Spec, vP] and move from there to subject position. Beyond the fact that they scope over the existentials, the interpretation of these expressions isn't at issue, so I represent this movement such that the moved expressions bind a variable in their scope that their trace denotes.

(13) a.



b. ⟦ DP ⟧^{g} =

ιz . $z{=}g(7)$ & [BOOK-OF-$g(3)$](z)

c. ⟦ TP′ ⟧^{g} =

$\exists y$. BOOK(y) . y read ιz . $z{=}g(7)$ & [BOOK-OF-$g(3)$](z)

d. ⟦ TP″ ⟧^{g} =

$\forall x$. GIRL(x) $\rightarrow$ [$\exists y$. BOOK(y) . x loves ιz . $z{=}g(7)$ & [BOOK-OF-x](z)]

e. ⟦ &P ⟧^{g} =

[$\forall x$. GIRL(x) $\rightarrow$ [$\exists y$. BOOK(y) . x loves ιz . $z{=}g(7)$ & [BOOK-OF-x](z)]] &

[$\forall x$. WOMAN(x) $\rightarrow$ [$\exists y$. BOOK(y) . x hates ιz . $z{=}g(7)$ & [BOOK-OF-x](z)]]

In line with idea that the sharing mechanism of RNR reduces to multidominance, the DP in object position has multiple mothers. In addition, QR of an existential, now to be understood as external Merge of a $Q_\exists$ head that semantically binds the definite DP, has applied twice (once per conjunct).

Each instance of QR puts the NP complement to *some* in a position where it restricts an existential quantifier, and thus the NP ends up being triply dominated. And in precisely the same fashion as described in section 2, the NP will compose with each of its sisters; there now happens to be three. Its composition with the determiner *some* restricts the definite description such that the object DP comes to denote what's given in (13b). In addition, the NP composes with each conjunct's existential quantifier, thereby restricting them to range over things that *book of hers* holds of.

Crucially, the value of *hers* may vary with its binder; this shakes out in the following way. I've given this pronoun the arbitrary index 3. It can be bound by something in either conjunct, so long as the binder prefix in each binds that index. There's no problem with doing so: binding is resolved in each conjunct independently, and the predicate that the NP denotes comes to hold of different books in the two conjuncts.[4] The same one-to-many relation between an index and its associated binder prefixes holds of the index that *some* introduces: 7. Divorcing the word *some* from existential quantification lets one instance of the former cue multiple instances of the latter in cases of multiple dominance. If the phrase that *some* heads contains a pronoun, the pronoun may be bound by multiple expressions at once if binding is resolved conjunct-internally. Once the conjuncts are coordinated, the root will get the meaning in (13e), which is equivalent to (12b), as desired.

The above amounts to a new way of getting sloppy interpretations for pronouns, and this way of getting sloppiness derives the fact that gender concord between the pronoun and each of its binders is a precondition for acceptability. This result obtains because under the multidominant approach to RNR, a pivot-internal pronoun is literally a part of every conjunct, so a gender mismatch between the pronoun and any binder will be blocked by whatever prevents a pronoun from being gendered unlike its binder generally. For concreteness, let's assume that what's responsible for a gender match between binders and bindees is the entries in (14). Those denotations give us a handle on the contrast between the monoclauses in (15); in the unacceptable (15a) *her* is prevented from denoting individuals the universal quantifier could range over.

(14) a. $[\![\text{ her}_n \text{ }]\!]^g = g(n)$, only if $g(n)$ is feminine

b. $[\![\text{ his}_n \text{ }]\!]^g = g(n)$, only if $g(n)$ is masculine

(15) a. * Every boy_i loves her_i mother.

b. Every boy_i loves his_i mother.

If RNR can put the same pronoun in two conjuncts, we'd expect the gender presupposition the pronoun introduces to be active in each. If the sloppy pronoun and one of its binders don't match in gender, the presupposition won't be met and, as in (15a), the derivation won't succeed. This contrasts starkly with VP-ellipsis: when sloppy readings of pronouns come about under VPE, the overt pronoun and any elided ones have unique binders. Since no pronoun is shared by multiple binders, nothing forces those binders to be gendered alike, and the weaker variety of sloppiness follows.

3.1 The relation between RNR and backward VPE

I've now sketched an account of RNR that derives its empirical footprint in the domain of sloppy pronouns. In all previous examples, the pivots were DPs. The purpose of this section is to show that even when an RNR pivot is of a category that can be elided independently, intonation can tease the processes apart in a way that correlates with the kind of sloppiness involved.

In Right Node Raising, the strings that are surface-coordinated to the exclusion of the pivot are termed REMNANTS. RNR typically requires the expressions at the right edges of the remnants to be contrastively focused (Hartmann 1998). In English, medial focus is encoded prosodically with L+H* pitch accents on the contrasting expressions. Moreover under RNR, the right edge of each remnant constitutes a phrase boundary, associated with L- accent and a temporal disjuncture (Selkirk 2002). Together, the pitch and phrase accents constitute a so-called DUNCECAP: a H* peak on the stressed syllable, flanked by a sharp rise on the left and a sharp fall on the right. (16) has these properties, and as expected a sloppy reading isn't possible.

(16) * Mary$_i$ WON'T$^{L+H^*\ L-}$, but John$_j$ WILL$^{L+H^*\ L-}$, visit his$_{i/j}$ mother.

The sloppy reading comes about, however, once the string is given the intonation in (17).

(17) MARY$_i$ won't$^{L+H^*\ L-}$, but JOHN$_j$ 'll$^{L+H^*}$ visit his$_{i/j}$ mother.

This differs from (17) in the following respects. First, the subjects bear a contrastive pitch accent, but the modals do not. (I've contracted *will* to ensure this for the reader, but for most speakers I consulted this contraction wasn't necessary for sloppiness.) Second, there is no disjuncture (pause) after the modal in the second conjunct.

The contrast is derived for free if multidominant RNR is responsible for (16) while VP ellipsis underlies (17).[5] I'd like to suggest that their intonations recommend this treatment as well. Pitch accents aside, there's a prosodic similarity between the conjuncts of (16) that is absent from (17) in a way that can be linked to their syntax. By hypothesis, the pivot of (16) has the same relationship to each conjunct syntactically (containment), and that symmetry is reflected by a pause after each remnant. By contrast, in (17) ellipsis targets the conjuncts asymmetrically, and the asymmetry is reflected prosodically: there's a disjuncture after one modal (in the ellipsis site) but not after the other.

4 Conclusion

This paper focused on deriving a pronominal gender concord effect observed in Right Node Raising. A pronoun in an RNR pivot can get a sloppy interpretation only if it matches all binders in gender. I took this fact as evidence that RNR is non-elliptical in nature, and sought to get sloppiness in a different way. The proposal built on the idea that RNR pivots are multiply dominated, and on a way of understanding QR that decouples quantification from its morphological cue. The first assumption derives the gender-restricted sloppiness that RNR exhibits, and the second an interaction with quantifier scope.

There are two kinds of sloppiness that pronouns can exhibit, then. The elliptical kind

involves multiple pronouns, but the multidominant kind involves sharing a pronoun. If the account is correct, the ability to tolerate a gender mismatch is indicative of something having elided, while obligatory gender concord diagnoses multiple dominance. Some support for this split comes from minimal pairs like (16-17), where the unavailability of sloppiness is a function of an intonation pattern characteristic of Right Node Raising.

To the extent that RNR doesn't tolerate gender mismatches, then, RNR is not ellipsis-derived. And in light of the examples in section 1 which show that ATB patterns like RNR in gender mismatch intolerance, the same logic applies: those data caution against an elliptical account of ATB.

References

Barros, M. and Vicente, L. (2009). Backward... ellipsis? *Talk given at ZAS*.

Barros, M. and Vicente, L. (2011). Right node raising requires both ellipsis and multidomination. *University of Pennsylvania working papers in linguistics*, 17(1).

Fiengo, R. and May, R. (1994). *Indices and Identity*. MIT Press.

Fox, D. (1999). Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry*, 30(2):157–196.

Fox, D. (2002). Antecedent-contained deletion and the copy theory of movement. *Linguistic Inquiry*, 33(1):63–96.

Fox, D. and Johnson, K. (2015). QR is restrictor sharing. *Proceedings of WCCFL*.

Ha, S. (2008). *Ellipsis, right node raising, and across-the-board movement*. PhD thesis, Boston University.

Hartmann, K. (1998). *Right Node Raising and Gapping*. PhD thesis, Goethe-Universität zu Frankfurt am Main, Frankfurt.

Hartmann, K. (2000). *Right Node Raising and Gapping*. Philadelphia: John Benjamins.

Heim, I. (1997). Predicates or formulas? evidence from ellipsis. *Proceedings of SALT*, pages 197–221.

Johnson, K. (2007). LCA + Alignment = RNR. Workshop on Coordination, Subordination and Ellipsis, Tubingen.

Johnson, K. (2012). Towards deriving differences in how QR and Wh- movement are pronounced. *Lingua*, 122(6):529–553.

Kennedy, C. (1997). VP-Deletion and "nonparasitic" gaps. *Linguistic Inquiry*, 28(4):697–707.

Langacker, R. (1969). On pronominalization and the chain of command. In Reibel, D. A. and Schane, S. A., editors, *Modern studies in English*, pages 160–186. Englewood Cliffs, NJ: Prentice-Hall.

May, R. (1977). *The grammar of quantification*. PhD thesis.

May, R. (1985). *Logical form*. Cambridge, Massachusetts: MIT Press.

McCawley, J. (1982). Parentheticals and discontinuous constituent structure. *Linguistic Inquiry*, 13:91–106.

Nissenbaum, J. W. (2000). *Investigations of covert phrase movement*. PhD thesis, Massachusetts Institute of Technology.

Nunes, J. (1999). Linearization of chains and phonetic realization of chain links. In Epstein, S. and Hornstein, N., editors, *Working minimalism*, page 217–249. MIT Press.

Nunes, J. (2004). *Logical form*. Cambridge, Massachusetts: MIT Press.

Ross, J. R. (1967). *Constraints on Variables in Syntax*. PhD thesis.

Selkirk, E. (2002). Contrastive focus vs. presentational focus: Prosodic evidence from right node raising in English. In *Proceedings of Speech Prosody*.

Wilder, C. (1999). Right node raising and the LCA. *Proceedings of WCCFL*, pages 586–598.

Footnotes

[1]I illustrate with VP-ellipsis here, but the same facts hold for NP- and AP-ellipsis. For instance, the second clause of *Mary likes three of her relatives, but John likes only one* can be paraphrased "John likes only one of his relatives". Likewise, the second clause of *I consider Mary happy with her profession, but I consider John not* can be paraphrased "I consider John not happy with his profession".

[2]For Fox and Johnson, the facts that motivate the splitting up of *every* and universal quantification are varied and somewhat orthogonal to present purposes. To give a simple example, they're concerned with how (i), with two *every*s, might map onto the truth conditions in (ii), with one instance of quantification over man/woman pairs.

i. *Every man and every woman who came in together danced.*

ii. $\forall\langle x, y\rangle$. [man(x) & woman(y) & $\langle x,y\rangle$ came in together] $\rightarrow$ $\langle x,y\rangle$ danced

[3]A note on the relation between trees like (10) and how they're spoken. That *every* is pronounced post-verbally follows from the assumption that it's a determiner; this is, after all, where determiners that head verbal complements are usually linearized. Likewise, it follows from the assumption that $Q_{\forall}$ has no exponent that nothing is spoken in the high position. In this way of doing QR, however, there isn't any trivial explanation for the fact that the NP *book* is only exponed once. Even if something guarantees this effect, there isn't an explanation for why it's linearized adjacent to one of its sisters (*every*) but not the other ($Q_{\forall}$), either. Indeed, expressions that occupy multiple positions in a tree pose a real challenge for all variants of the copy theory (that is, regardless of whether movement is implemented by a rule that copies syntactic expressions, or is instead implemented via multiple dominance); this is because such expressions are typically overtly realized just once. The challenge is to develop a linearization algorithm that will deliver just one overt expression (in the right position) despite that expression being multiply represented in a graph. Nunes (1999, 2004) and Johnson (2012) grapple with this problem in different ways,

and I refer the reader there for a fuller sense of the problem. Perhaps a relevant fact, though, is that NPs in English are always linearized adjacent to their determiners, irrespective of the type of movement involved. Topicalization, for instance, fronts entire DPs (*The dog, she loves*, cf. **The, she loves dog*), as does *wh*-movement (*Which dog does she love?*; cf. **Which does she love dog?*). Exploring what derives this general fact is beyond the scope of the present paper, but the position *book* occupies is, at least, not terribly surprising in the context of movement processes beyond QR.

[4]However, that a variable may multiply bound runs against Heim's (1997) prohibition on coindexing:

i. No Meaningless Coindexing: If an LF contains an occurrence of a variable v that is bound by a node α, then all occurrences of v in this LF must be bound by the same node α.

Heim intends (i) as a ban on "gratuitous (i.e., semantically inert) coindexing" (p. 6), and it offers her a way of deriving an unrelated licensing contrast between two kinds of VP ellipsis that Kennedy (1997) observes. I won't argue against (i) as applied to VPE, but instead simply note that the kind of coindexing in (13a) seems to fall outside the scope of what (i) was intended to apply to, and that the assumption that RNR involves multidominance realizes the possibility of sharing pronouns anyway.

[5]This is incompatible with any formulation of the Backward Anaphora Constraint (Ross 1967, Langacker 1969) that would prevent backward ellipsis in a coordinate structure. To the extent (17) is a grammatical instance of VP ellipsis, such a version of the constraint is too strong. See also Barros and Vicente (2009, 2011:ft. 7).