

Possessive Plurals and Their Readings

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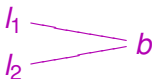
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Introduction

- Since Scha (1981), the various mappings that exist between verbal arguments have been a topic of much research (Schein 1993, Schwarzschild 1996, Landman 2000, Winter 2000, Beck 2000 & many more).
- For example, (1) allows two mappings between *two linguists* and *a book*:

(1) Two linguists wrote a book about plural possessives.

- Collective:



- Distributive:



Introduction

- In this talk, I extend this research to a domain in which it has not yet been studied: the arguments of the English prenominal possessive construction.
- The readings available to possessives are only a subset of those available in comparable verbal constructions, but interestingly include the reading known as *dependent plurality*
- I will show how the data arises from the same principles I have previously argued for as an explanation of dependent plurality in the sentential domain.

Some terminology

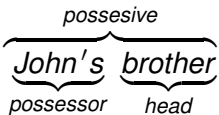
- *possesive*
● *John's brother*
- *John's books* → Bare plural head
- *every man* → Quantified singular
- *all the men* → Quantified plural
- *three men* → Numerical plural

Some terminology

A diagram showing the phrase "John's brother" in italics. A large curly brace above the phrase is labeled "possesive". Below the phrase, two smaller curly braces are positioned under "John's" and "brother" respectively. The word "John's" is labeled "possessor" and the word "brother" is labeled "head".

- *John's books* → Bare plural head
- *every man* → Quantified singular
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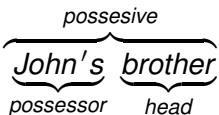
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Outline

- 1 **Plurals in possessives**
 - Mapping quantifiers in possessives
 - Property of the poss. relation or of the quantifiers?
- 2 **Analysis**
 - Finding the pattern
 - Bare plurals and dependent readings

A singular possessive

- Let us start with a simple sentence including a possessive.
A standard way to interpret (2a) is as in (2b) (Barker 1995):

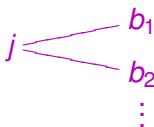
- (2) a. Fred met John's brother.
b. $\exists x[\text{BROTHER}(\text{john}, x) \ \& \ \text{MET}(\text{fred}, x)]$

j ——— *b*

Plural head

- It seems trivial to extend this to cases where the head is plural:

- (3) a. Fred met John's brothers.
b. $\exists X[|X| > 1 \ \& \ \forall xX[\text{BROTHER}(\text{john}, x)] \ \& \ \text{MET}^*(\text{fred}, X)]]$



Plural possessor

- Nor does it appear difficult to replace the possessor in (2a) with a plural:

- (4) a. Fred met John and Mary's brother.
b. $\exists x[\text{BROTHER}(\text{john}+\text{mary}, x) \ \& \ \text{MET}(\text{fred}, x)]$

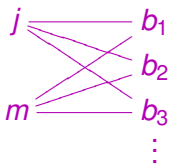


Both plural

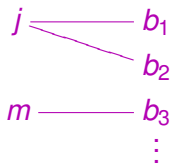
- But if we try to do both at once:

- (5) a. Fred met John and Mary's brothers.
 b. $\exists X[|X| > 1 \ \& \ \forall xX[\text{BROTHER}(\text{john}+\text{mary}, x)] \ \& \ \text{MET}^*(\text{fred}, X)]]$

- (5b) requires:



- but (5a) is true if:

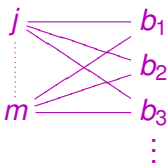


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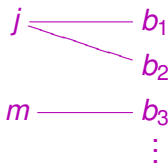
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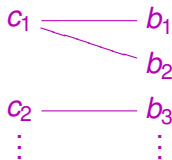
Is the problem the conjunction?

- It might be tempting to try to decompose the conjunction:

(6) *John and Mary's children* =
John's children and Mary's children

- But other plural possessors show the same pattern:

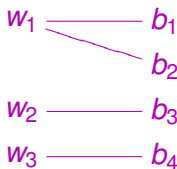
(7) a. Fred met some children's brothers.



A Cumulative relation?

- The possessives seen so far require that every element in the head is mapped onto an element of the possessor, but makes no other requirements.
- This is similar to cumulative readings familiar from the sentential domain:

(8) Three women gave birth to four babies.



Cumulativity and the ** operator

- One common way of treating cumulativity is by attaching a ** operator to the predicate, making it into a cumulative relation (Krifka 1986, Beck and Sauerland 2000):

$$(9) \quad R^{**}(X)(Y) = 1 \text{ iff } \forall xX\exists yY[R(x)(y)] \ \& \ \forall yY\exists xX[R(x)(y)]$$

- Perhaps possessives are restricted to cumulative relations?

Quantified singular possessors

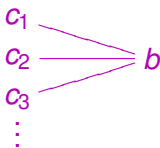
- Unfortunately, looking at more data shows that this cannot be a general solution.
- Rather, the mapping between the head and possessor depends on the nature of the quantifiers involved.
- Two different types of possessives show this:
 - 1 Possessives with quantified singular possessors.
 - 2 Possessives with numerical plural heads.

Quantified singular possessors

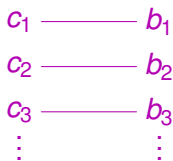
- Here is a possessive with a singular quantified possessor:

(10) Fred met every child's brother.

- Cumulativity prediction:



- but (10) is true if:

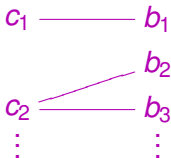


Quantified singular possessors

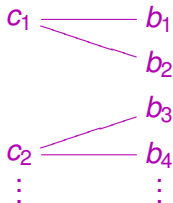
- Similarly for a plural head:

(11) Fred met every child's brothers.

- Cumulativity prediction:



- but (11) is true iff:



Quantified singular possessors

- This is not just a special case with *every*.
- In fact, this is a general difference between singular and plural quantified possessors:

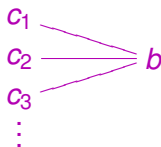
(12) Fred met more than one child's brother.

(13) Fred met more than two children's brother.

- (12) is true if:



- (13) is true if:



Numerical possessive heads

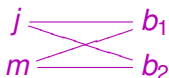
- A second counter-example to the cumulativity analysis comes when the head is a numerical plural

(14) Fred met John and Mary's two brothers.

- Cumulativity prediction:



- but (14) is true iff:









Interim conclusion













Conclusion so far

- Restricting the possessive relation to cumulative relations gives the wrong results.
- Rather, the nature of the mapping between the possessor and the head depends on the type of quantifiers involved.







Summary of data so far

	Quantified Singular Possessor	Plural Possessor
Singular head	<i>every boy's hat</i>  <i>every boy has a hat</i>	<i>the boys' hat</i>  <i>a hat belongs to the boys</i>
Num. head	<i>every boy's 2 hats</i>  <i>every boy has two hats</i>	<i>the boys' 2 hats</i>  <i>2 hats belong to the boys</i>
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The pattern

- Except for the case of plural possessor, bare plural head, there is a clear pattern:

The pattern

- Singular possessors distribute over the heads.
- Plural possessors are distributed over by the heads.
- We can account for this via a scope mechanism.

A scope-based account

- When a possessor is a quantified singular, it must QR out of the possessive (see Barker (1995)):

- (15)
- Fred saw every child's brother.
 - $\forall x[\text{CHILD}(x) \rightarrow \exists y[\text{BROTHER}(x, y) \& \text{SAW}(\text{Fred}, y)]]$

- On the other hand, when the possessor is a plural, it stays *in-situ* as a modifier for the head:

- (16)
- Fred saw two children's brother.
 - $\exists y[\exists X[|X| = 2 \& \forall x[\text{CHILD}(x) \rightarrow \text{BROTHER}(x, y) \& \text{SAW}(\text{Fred}, y)]]]$

What about the odd case?

- We have seen that bare plurals heads have two special properties:
 - 1 They always take low scope, regardless of the scope preferred by the possessor.
 - 2 They induce a cumulative-like reading when the possessor is plural.
- These properties are similar to those shown by bare plurals in the verbal domain, in a reading known as **dependant plural** (de Mey 1981).

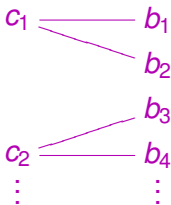
Dependent plurals

- Dependent plurals allow cumulative-like interpretation, even in environments that don't normally allow for cumulativity:

(17) All the children have 2 brothers.

(18) All the children have brothers.

- (17) is true if:



- (18) is true if:



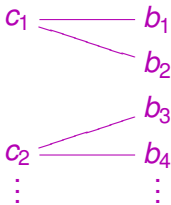
Dependent plurals

- Just like in the possessive case, bare plurals will not create a cumulative-like reading with a singular quantified DP:

(19) More than one child has brothers.

(20) More than two children have brothers.

- (19) is true if:



- (20) is true if:



Dependent plurals

- In earlier work, I argued that dependent plural readings arise from two properties of existential bare plurals (Zweig 2005, Submitted):
 - 1 They contribute the same truth-conditional meaning as a low-scope singular indefinite (Krifka 2004, Sauerland et al. 2005).
 - 2 They trigger an overall implicature that more than one of the denoted entity participates in the relevant events. (Spector 2003, 2007)
- For plural quantifiers the implicature applies globally, but for singular quantifiers it applies per entity quantified over.
- This is because quantified singular DPs scope over event quantification, but plural quantified DPs scope lower.

LFs of sentential examples

- (21) a. Every child has brothers.
 b. **Assertion:** $\forall y[\text{CHILD}(y) \rightarrow \exists E \exists e \exists X[Ee \ \& \ \text{HAVE}(e) \ \& \ \text{BROTHERS}(X) \ \& \ \text{EXPERIENCER}(e)(y) \ \& \ \text{THEME}(e)(X)]]$
implicature: For every child y , $|\text{brothers in } y\text{'s having events in } E| > 1$
- (22) a. All the children have brothers.
 b. **Assertion:** $\exists E \forall y[\text{CHILD}(y) \rightarrow \exists e \exists X[Ee \ \& \ \text{HAVE}(e) \ \& \ \text{BROTHERS}(X) \ \& \ \text{EXPERIENCER}(e)(y) \ \& \ \text{THEME}(e)(X)]]$
Implicature: $|\text{brothers in the having events in } E| > 1$

Back to the possessives

- This account can help explain some of the properties of quantifiers in possessives:
 - 1 Singular possessors need to scope over event quantification, and thus must raise out of the possessive.
 - 2 Plural possessors can stay *in-situ*.
 - 3 But, bare plurals must always take lowest scope (Carlson 1977), and plural possessors need to scope out when there is a bare head.
 - 4 When they do, they scope to a position lower than event quantification, creating a dependent reading.

LFs of possessive examples

- (23) a. Fred saw every child's brothers.
 b. **Assertion:** $\forall y[\text{CHILD}(y) \rightarrow \exists E \exists e \exists X[Ee \ \& \ \text{SEE}(e) \ \& \ \text{BROTHERS}(y)(X) \ \& \ \text{EXPERIENCER}(e)(\text{fred}) \ \& \ \text{THEME}(e)(X)]]$
implicature: For every child y , $|y$'s brothers in Fred's seeing events in $E| > 1$
- (24) a. Fred Saw all the children's brothers.
 b. **Assertion:** $\exists E \forall y[\text{CHILD}(y) \rightarrow \exists e \exists X[Ee \ \& \ \text{SEE}(e) \ \& \ \text{BROTHERS}(y)(X) \ \& \ \text{EXPERIENCER}(e)(\text{fred}) \ \& \ \text{THEME}(e)(X)]]$
Implicature: $|$ brothers in Fred's seeing events in $E| > 1$

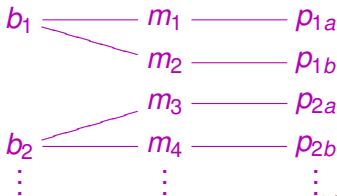
Evidence for singulars scoping out

- The proposal that quantified singular possessors scope out to a high position in the sentence conflicts with previous analyses.
- May (1985), for example, raises the possessor only high enough to c-command the head, but DP-adjoined. Barker (1995) also QRs the possessor to a relatively low position.
- Evidence for the high position of singular possessors can be found with the interaction with sentence-level dependent readings.

Evidence for singulars scoping out

- A dependent reading can only for if there is no singular quantifier intervening between a plural DP and the bare DP in its scope (Zweig 2005, Submitted).
- If a quantified singular possessor only QRs to a DP-adjoined position, it would prevent a dependent reading between a plural subject and the head.
- But note:

(25) 2 men saw every boy's picture



Conclusions

- Possessives allow for a dependent reading that cannot be explained by a cumulativity-based account. This provides additional, novel evidence against such an account.
- The dependent reading, as well as the other readings of possessives, can be accounted for by the same basic principles that account for dependent readings in verbal arguments:
 - 1 Bare plurals must always be distributed over, and they are inherently number neutral + non-local cardinality condition/implicature.
 - 2 Quantified singular DPs must scope over event quantification, forcing QR out of possessives.
 - 3 Quantified plural DPs can remain *in-situ* as possessives unless the head is plural.

Thank you

Thank you!

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