Zweig 2005 The implications of dependent plural readings

- Non-kind denoting
- Abstracting away from issues of genericity (?)

2. Dependant plurals

- Singulars (1) and dependant plurals (2) have singular reference

(1) a. Male lions have a mane.

b. $\forall x[\text{LION}(x) \rightarrow \exists y[|y| \geq 1 \ \& \ \text{MANE}(y) \ \& \ \text{HAS}(x)(y)]]$

(2) a. Male lions have manes.

b. $\# \forall x[\text{LION}(x) \rightarrow \exists y[|y| > 1 \ \& \ \text{MANES}(y) \ \& \ \text{HAS}(x)(y)]]$

#Male lions should have a plurality of manes (each).
Instead it means the same as the singular in 1b, if x is a male lion then y has a mane.

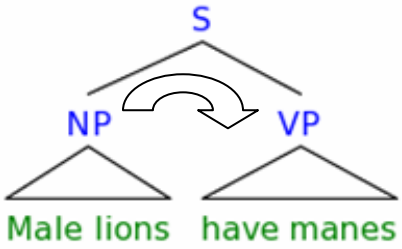
- But dependant plurals must refer to more than one thing (manes and boroughs) overall.

(3) Ten students live in New York boroughs.

(4) Ten students live in a New York borough.

- Plural (3) and singular (4) have different truth conditions: (3) is not true if all live in Manhattan, (4) is true if they all live in Manhattan.

Manes is a dependant plural, a plural in the scope of a plural (lions).



3. Are dependent plurals cumulative readings?

- de May 1981, Roberts 1990, Beck 2000, dependant plurals are like cumulative readings found in numerical indefinites:

(5) a. Three women gave birth to five babies.

b. *A total of 3 women gave birth to babies, and a total of 5 babies was born.*

- Minimal pair which seem to mean the same, with the two structures
  - Dependant plural

(6) Three women gave birth to babies.

  - Cumulative

(7) Three women gave birth to more than one baby.

- However dependant plurals can appear in 2 environments, unlike numerical indefinites with cumulative readings
  - In the scope of quantifiers *most* and *all*

(8) a. Most students read thirty papers. $\not\Rightarrow$
Most students read at least 1 paper, and a total of 30 papers were read overall.

b. Most students read papers. $\Rightarrow$
Most students read at least 1 paper, and more than 1 paper was read overall.

(9) a. All the students read thirty papers. $\not\Rightarrow$
All the students read at least 1 paper and a total of 30 papers were read overall.

b. All the students read papers. $\Rightarrow$
All the students read at least 1 paper and more than 1 paper was read overall.

- In the scope of quantified adverbials

(10) Three trains leave every day to Amsterdam from this station. $\not\Rightarrow$
At least 1 train leaves every day, and a total of 3 trains is involved overall.

(11) Trains leave every day to Amsterdam from this station. $\Rightarrow$
At least 1 train leaves every day, and more than 1 train is involved overall.

- So dependant plurals cant be a subcase of cumulative readings.

4. The overall plurality requirement

- Chomsky 1975, Kamp and Reyle 1993, Spector 2003, dependant plural are semantically the same as the singular, but have obligatorily low scope.
- However, this doesn't explain the overall plurality requirement.
- The plurality require coincides with pragmatic implications
- Downward Entailing Contexts: don't have an overall plurality requirement. (compare sentences where no conversational implicature is possible in16 with sentences where there's no overall plurality requirement in 13)

(16) a. Few men ate three apples. $\not\Rightarrow_{impl}$
Few men ate exactly 3 apples.

b. Israel's olympic team almost never won three medals. $\not\Rightarrow_{impl}$
Israel's olympic team almost never won exactly 3 medals.

c. You must consult three relevant articles. $\not\Rightarrow_{impl}$
You must consult exactly 3 relevant articles.

d. You must consult some relevant articles. $\not\Rightarrow_{impl}$
You must consult some (but not all) of the relevant articles.

e. If my opponents crash into two trees, I will win the ski race. $\not\Rightarrow_{impl}$
If my opponents crash into exactly 2 trees, I will win the ski race.

f. Do all your friends like two cooking shows?
No, some of them like more than two.
Yes, and some of them even like more than two.

g. Did those men share some pizzas?
No, they shared all of the pizzas.
Yes, they shared all of the pizzas.

(13) a. Few men ate apples $\not\Rightarrow$
more than 1 apple was eaten overall

b. Israel's olympic team almost never won medals $\not\Rightarrow$
more than 1 medal was won overall

c. You must consult relevant articles. $\not\Rightarrow$
more than 1 article overall must be consulted

d. If my opponents crash into trees, I will win the ski race. $\not\Rightarrow$
more than 1 tree must be crashed into overall for me to win

e. Do all your friends like cooking shows?
No, they all like "The Frugal Gourmet".
Yes, they all like "The Frugal Gourmet".

- Upward Entailing Contexts: show the overall plurality requirement (see all of the above) but, like conversational implicatures, it is even cancelable in upward entailing environments with pragmatic conditioning.

(17) [*FBI investigator:*]Some suspects live in big cities, perhaps even all of them.

(18) [*FBI investigator:*]All the suspects live in big cities, perhaps even the same big city.

- Non-Monotone Contexts: conversational implicatures and dependant plurals hold in non-monotone environments.(what does this mean? Why is it important)

(19) Exactly three guests ate steaks. $\Rightarrow_{impl}$
More than 1 steak was eaten overall

(20) Exactly three guests ate two steaks. $\Rightarrow_{impl}$
Exactly 3 guests ate exactly 2 steaks.

- Generalization

(21) Bare plurals have a number-neutral denotation similar to that of indefinite singulars, except that they also come with a plurality implicature.

5. Number-neutral bare plurals outside dependent plurality

- Other number neutral bare plurals can be found in other contexts with pragramatic strengthening.
- Saureland et al. 2005 singular presupposes only a singular atomic entity, plural has no presupposition.
- *Maximize Presupposition Principle (Heim 1991)*
  When choosing between two morphemes, the one whose stronger presuppositions can be satisfied must be chosen.
- Plural choice implies that the more informative singular wasn't possible.

(22) John doesn't own small cars.

(23) John owns small cars.

- However lexical blocking (using the Maximize Presupposition Principle) doesn't always work, these mean the same thing:

(24) Most of my friends own a nice car.

(25) Most of my friends own nice cars.

- Zweig's proposal: number neutrality is supplemented by an implicature of a total plurality, rather than of non-local singularity

  (26) John owns at least 1 small car, and more than 1 small car is owned overall.

  Since there is no quantification in this sentence that can result in a plural amount of cars, except the cars actually owned by John, the plurality implicature means that John owns several cars.

6. Formulating the plurality condition

- Schein 1993, some cumulative readings are composed of a conjunction, the second conjunct contains an anaphor *therein* which refers back to the event in the first conjunct.

  (5a) Three women gave birth to five babies.

  (27) Three women gave birth to babies, and five babies were born *therein*

  (28) *therein* $=_{def}$ In the relevant second-order event that contains the plural element.
- Carlson 1980, bare plurals don't QR
- Derivations for Upward Entailing Contexts
  - Dependant plurals

    (29) a. My friends have big heads.

    b. *assertion:* $\exists E \forall x[\text{MY FRIEND}(x) \rightarrow \exists e \in E[x \text{ has 1 or more big heads in } e]]$
    implicature: $|\textbf{big heads } \textit{therein}| > 1$
  - Bare plurals in other contexts

    (30) a. John owns expensive cars.

    b. *assertion:* $\exists E[\exists e \in E[j \text{ owns 1 or more expensive cars in } e]]$
    implicature: $|\textbf{expensive cars } \textit{therein}| > 1$
  - In the scope of a quantifying adverb (rough approximation)

    (31) a. John frequently reads horror novels.

    b. *assertion:* $\exists E[\text{FREQUENT}(E) \,\&\, \forall e \in E[j \text{ reads 1 or more horror novels in } e]]]$
    implicature: $|\textbf{horror novels } \textit{therein}| > 1$
- Derivations for Downward Entailing Contexts

  (32) a. My friends didn't eat tacos.

  b. *assertion:* $\exists E \forall x[\text{MY FRIEND}(x) \rightarrow \neg\exists e \in E[x \text{ ate 1 or more tacos in } e]]$
  implicature: none

6.1. Intervention effects

- However, the overall plurality condition is subject to intervention effects, intermediate quantifiers create domains for the plurality implicature
- Two second order variables over events, one AG(e) and GAVE A FLOWER(e)

  (33) All the boys gave a girl flowers.
- Current system derives a plurality implicature at the top level:

(34) #*All the boys are such that each gave (at least) 1 girl (at least) 1 flower, and more than one flower was given overall*

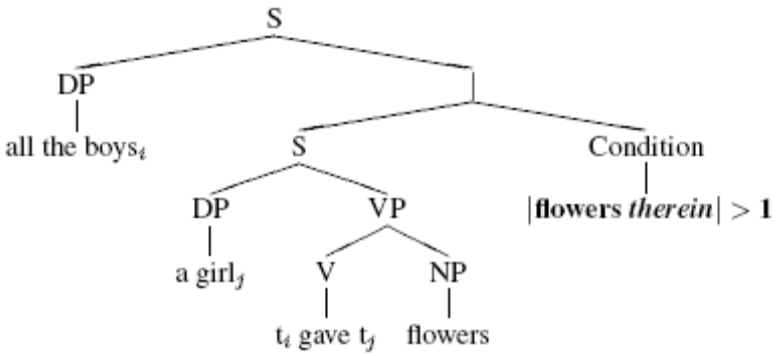
Show the tree with the condition on top?

- Instead of at the intermediate level:

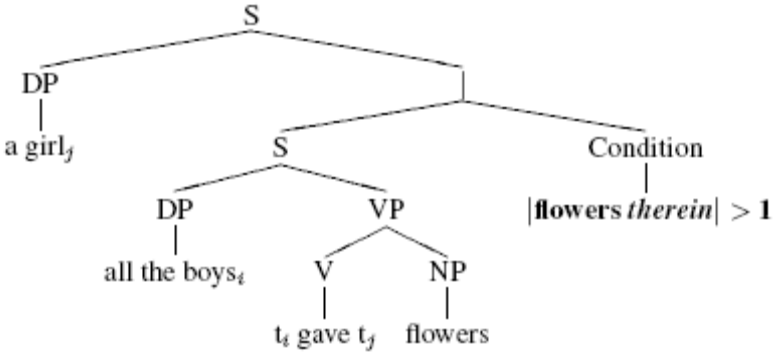
(35) a. *All the boys are such that each gave (at least) 1 girl (at least) 2 flowers*

b. *There is (at least) 1 girl such that all the boys each gave her (at least) 1 flower*

(36) a.



b.



- Unwelcome result: it would need to refer to the lowermost event variable containing the plural, but implications don't typically operate this way.
- (Chierchia 2002 suggests that scalar implicatures (and thus this plurality implicature) can be calculated locally, putting that aside and assuming that they can't:)
- Instead, since E1 contains E2, then E1 will also contain a plurality of flowers.
- This only holds in non-Downward entailing environments, and so the overall plurality requirement wont arise.
- **"if there is more than one member of a nominal element involved in the most deeply embedded event, then there will be more than one involved in all events it is a part of."**
- So we don't need a definite *therein,* instead we need a universal *therein*'

  (38) *therein*' =$_{def}$ In all the relevant second-order events that contain the plural element.
- This is only relevant when there is more than one second order event (ie, plural subjects like in "all the boys" and "male lions")
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7. Dependent plural readings and de re

- Partee 1985, singulars (39a) and dependant plurals (39c) can have both *de re* and *de dicto* readings, and bare plurals (39b) cannot

(39) a. Miles wants to meet a policeman. (✓*de dicto*/✓*de re*)

b. Miles wants to meet policemen. (✓*de dicto*/**de re*)

c. All the boys want to meet policemen. (✓*de dicto*/✓*de re*)

- In fact it is possible to get the *de re* reading for bare plurals:

(40) *In a video rental store*
Little boy: So, what movies do you want to get?
Little girl: How about *Alien*? Or *Silence of the Lambs*? Or *American Pie*?
Little boy: Mom! Mary wants to see R-rated movies!

- The *de re* meaning is problematic for Calson 1980 which assumes that bare plurals cannot QR, in order to get *de re* its assumed to have QR-ed, however this is getting scope over an intensional operator rather than quantification as we have seen with the overall plurality requirement.
- Maybe getting scope with intentional operators and getting scope with quantification/negation are done by the same mechanism (Farkas 1997).

8. Conclusion

- Dependant plurals might help explain bare plurals.
- The interpretation of bare plurals can be split into two parts
  - Number neutral existential statement
  - A plurality implicature which results in plurality in upward entailing environments
  - Which is applied to supersets of its event (?)
- Closer to an account of the plural morpheme.

References

Zweig, Eytan (2006). 'The implications of dependent plural readings', in Davis, C., Deal, A. R. & Zabbal, Y. (eds.) *NELS 36: Proceedings of the thirty-sixth annual meeting of the North East Linguistic Society* pp. 735-746.