

Distributivity and agreement: new evidence for groups as sets

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Main claims of this talk

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b. My family are tall.
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- The set denotation is basic. The atomic denotation is derived by a typeshift triggered by a type mismatch.
- Advantages of the proposal:
 - The behaviour of group NPs with different kinds of agreement follows from common assumptions about the semantics of number;
 - Crosslinguistic differences are located in syntax: no need for any language-specific semantic operations or ambiguities.

Outline

Background: quantificational distributivity

Data: Q-distributivity and reciprocity in British English

Analysis: group NPs as sets

- The analysis in a nutshell

- Accounting for other data

- Additional evidence

Conclusions & outlook

Two kinds of distributivity

- There are two ways to derive distributivity: **lexical ('P')** and **quantificational ('Q')** following e.g. Roberts (1987), Hoeksema (1988), Winter (1997), Champollion (2010), de Vries (2012)
 - (2) The girls **smiled**.
 - (3) a. The girls are **singing or dancing**.
 b. The girls are **hiding somewhere**.
 c. De kinderen **vinden zichzelf erg slim**.
 'The children consider themselves rather clever'
- **P**-distributivity: $\llbracket \textit{smile} \rrbracket(\llbracket \textit{the girls} \rrbracket)$ + lexical/world knowledge
- **Q**-distributivity: a covert quantifier over girls that gives us a logical form like $\forall x \in \textbf{the_girls} \rightarrow (\exists y. \textbf{hide_in}(x, y))$

Q-distributivity as a diagnostic for semantic number

- Group nouns show that the difference between P and Q is an empirical one: they allow P-distributivity but not Q-distributivity.
 - (4) a. The class **smiled**.
 - b. The team is singing or dancing. \Leftrightarrow The team is singing or the team is dancing
 - c. The class is hiding somewhere. \Leftrightarrow There is a place x s.t. the class is hiding in x
 - d. De klas vindt zichzelf erg slim. \Leftrightarrow The class considers the class very clever
- Straightforward explanation: group nouns range over **atomic** entities
(cf. Landman 1989, Barker 1992, Schwarzschild 1996... and contra Bennett 1974 and Pearson 2011)
- But this is not the whole story...

Q-distributivity with group NPs in BrE

- In British English, agreement choice determines the availability of Q-distributivity.

(5) a. The team **is** singing or dancing.

no DI

b. The team **are** singing or dancing.

✓DI

(6) a. The class **is** hiding somewhere.

no DI

b. The class **are** hiding somewhere.

✓DI

- Quantitative data from small pilot study (a truth value judgement task where informants judged sentences in the context of a 'distributive' situation):

NP	VP	%true
def. plural	plural	83%
group	plural	61%
group	singular	23%

Reciprocity with group NPs in BrE

- Lønning (2011) and Schwarzschild (1996) observe that group nouns are at best marginal with reciprocal predication:

- (7) a. *The team **is friends**.
b. ??The team usually **coaches each other**.

- But they seem fine when the predicate is plural. Some examples found with Google:

- (8) a. The Team **are friends** on track as well as off track[.]
b. Can a scientific program really change the way the Diaz family **love each other**?
c. Remember that your group **are neighbours** who have to get along outside the group as well as within it.

Generalisation

- Quantification (distributive or reciprocal) is only available with group NPs if the predicate is morphosyntactically plural.
- Conclusion: group NPs denote **atoms** when they occur with a singular VP, but **sets** when they occur with a plural VP. Similar suggestions can be found in Barker (1992), Schwarzschild (1996), Sauerland & Elbourne (2002), Sauerland (2004).

Generalisation

- Quantification (distributive or reciprocal) is only available with group NPs if the predicate is morphosyntactically **plural**.
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- Various possible ways to analyse this:
 - **Ambiguity** (suggested in Schwarzschild 1996)
 - **Typeshift, atomic denotation is basic** (Barker 1992, Sauerland 2004; other parts of Schwarzschild 1996; see also Landman 1989)
 - **Typeshift, set denotation is basic** (this work)

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The analysis in a nutshell

Basic assumptions:

- (1) Group nouns denote sets of sets (so referential group NPs denote **sets**)
- (2) Morphologically plural VPs denote sets of sets (following Bennett 1974, Link

1983, Winter 2002 and many others...)

For example: if $\llbracket is tall \rrbracket = \mathbf{tall} = \{\mathbf{j}, \mathbf{m}\} \dots$

...then $\llbracket are tall \rrbracket = *mathbf{tall} = \wp(\{\mathbf{j}, \mathbf{m}\}) - \emptyset = \{\{\mathbf{j}\}, \{\mathbf{m}\}, \{\mathbf{j}, \mathbf{m}\}\}$

- (3) Set-denoting referential NPs can be mapped to a corresponding **impure atom** (following Link 1984, Landman 1989, Winter 2002, 2007)

We will write the impure atom corresponding to the set $\{\mathbf{j}, \mathbf{m}\}$ as $\uparrow(\{\mathbf{j}, \mathbf{m}\})$. This notation is borrowed from Landman but I am not committed to his or any other particular set-theoretical analysis of this typeshift.)

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(1) $\llbracket \textit{The group is tall} \rrbracket = \text{tall}_{et}(\uparrow(\text{the_group})_e)$

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- Impure atom formation (1) is always available, mismatched agreement (2) is available if the syntax allows it (it does in BrE, but not in AmE)

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Barker's observation on *old*

- Barker (1992): (9a-b) are interpreted differently

(9) a. The committee is old .	✓ old members	✓ old committee
b. The committee are old .	✓ old members	# old committee

- Under our assumptions, the semantics of (9b) is analysed as ***old**(**the_committee**). For this to be true, each individual member of **the_committee** needs to be in the extension of (unstarred) **old**; in other words, *The committee are old* is true just in case the committee's members are old.
- (9a) is true iff $\uparrow(\mathbf{the_committee}) \in \mathbf{old}$. In this case, we may still draw a P-distributive inference about the individual members of the group.

Pollard & Sag's observation on *constituted*

- Pollard & Sag (1994): 'group-level' predicates like *be constituted/founded* cannot be pluralised in BrE:

(10) *The committee were constituted in 2001.

- Similar to (9b), (10) requires that each individual member of the committee was constituted in 2001, which is nonsense.

(Note that the inferences here only hold in a theory without mixed predicates.)

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Agreement in *there*-sentences

- Any applications of the analysis beyond the domain of group NPs?
 - (11b), which is acceptable in colloquial English, seems to lack a Q-distributive interpretation
- (11) a. There **are** two semanticists singing or dancing in my garden.
b. There'**s** two semanticists singing or dancing in my garden.
- We can analyse this just like the BrE group noun cases: in (11b), the type mismatch between the singular VP and the plural NP coerces the latter to shift into an impure atom.
 - Neither an ambiguity-based nor a 'fission'-based analysis of the group noun data can account for this.

Conclusions

- Morphologically singular group NPs in British English behave like atoms when they occur with a singular VP, but like sets when they occur with a plural VP.
- If we assume that group NPs are basically set-denoting, their behaviour with different kinds of agreement follows from common assumptions about the semantics of number morphology.
- Other advantages of the proposal:
 - Universal semantics; all crosslinguistic variation is syntactic.
 - Analysis is applicable to a wider range of semantic phenomena involving number mismatches.

Open questions and further research

- What about various kinds of NP/VP number mismatches in other languages? What about languages in which the VP never agrees in number, or languages that do not mark number at all?
- Can we show that group NPs denote sets in languages that do not allow them to take a plural VP? (Perhaps using Pearson's (2011) 'half of'-test?)

Thank you!¹

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