

1. Cardinal Noun Phrases and Adverbial Quantification.

1.1 Overview of Basic Facts. It has been noted that number indefinites are not always felicitous in generic sentences: they are arguably acceptable only with non-distributive predicates (1) (Krifka et al. 1995), i.e. with ambiguous and collective predicates (cf. Dowty 1987). The case is similar for examples with overt adverbs of quantification (2). The observed restriction is given in (3) as a syntactic constraint.

- (1) a. # [Twelve cats] are beautiful when they have white hair
- b. [Two magnets] either attract or repel each other
- (2) a. # [Four stars] always explode
- b. [Four stars] always explode together
- (3) * [... GEN/AdvQ [Dist [_{VP} ...]]]

1.2. Strictly Distributive Predicates. However, the preclusion of distributivity cannot be purely syntactic (e.g. covert distributivity operator and quantifying adverbs targeting the same syntactic position). Namely, generic cardinal NPs **can** be felicitous with distributive predicates (4). Consequently, the explanation of the interaction of number-specification and distributivity in generics must be semantic.

- (4) a. ? [Two Scotsmen] drink beer when they meet in a pub; three Scotsmen drink whiskey
- b. [Two Scotsmen] always drink beer when they meet in a pub

1.3. Ambiguous and Collective Predicates. Ambiguous predicates can apply to cardinal NPs in generic constructions. The readings that obtain are exclusively collective: e.g. (5) is false if it holds that whenever you see four movers, two are carrying one piano and the other two, another one. Felicity with some collective predicates is illustrated in (6). However, not all collective predicates lead to acceptable sentences (7) (cf. Magri 2007).

- (5) [Four movers] usually carry a piano
- (6) a. [Two Scotsmen] usually meet in a small pub
- b. [Four good midfielders] usually cancel each other out
- (7) # Three boys look alike

2. Accommodating Collectivity Presuppositions.

2.1. Collectivity Requirement. We follow Landman (2000) in assuming that collective predication, unlike plural distributive predication, is non-inductive: collective predicates require collective involvement of the plural agent (cf. Beck 2001, Hackl 2001) in the event described by the predicate. We take this requirement to be encoded in the respective lexical entry (8).

- (8) || meet ||^s = $\lambda x: \neg AT(x). \lambda e: \forall y [y \leq_{AT} x [AG(e)(x)] \rightarrow involved(e)(y)]. meet(e)(x)$

2.2. Intermediate Accommodation and Semantic Clash. Two assumptions are adopted to account for the above data. First, presuppositions generated in the nuclear scope of a quantifier need to be accommodated intermediately, i.e. they are added to the restrictor (Berman 1991, cf. discussion in von Stechow 2004). Second, if it is not possible for the standard implicatures of a sentence to be true, then the sentence is marked (cf. Spector 2007).

2.3. Deriving the Facts. The truth-conditions of (2a) and (2b) are given in (9). A standard quantity implicature that is observed with cardinal predicates is generated by (2a): for some number *n*, it is not the case that the speaker knows that *n* stars always explode. Since the restrictor in (9a) ranges over **all** collections of four stars (however unrelated), (9a) entails that every star explodes – in contradiction to the standard implicature. No such mismatch occurs in (9b) where an additional constraint holds of events in the restrictor: four stars may **not** come from disparate sub-events.

- (9) a. Ve. Restrictor: $\lambda e. \exists x [(four)^*(star)(e)(x)]$. Nuclear Scope: $\lambda e. \exists x [*(explode)(e)(x)]$.
- b. Ve. Restrictor: $\lambda e. \exists x [(four)^*(star)(e)(x) \wedge \forall y \leq_{AT} x [involved(e)(y)]]$.
- Nuclear Scope: $\lambda e. \exists x [(together)^*(explode)(e)(x)]$.

2.4. Group-formation is not an alternative. Dobrovie-Sorin (2007) proposes that French generic plural indefinites formed from relational nouns supply group variables. These, unlike sum variables, can be quantified over, which should account for the contrast in (10). This cannot be extended to our data:

Reciprocal predicates cannot be predicated of group-denoting NPs, as illustrated by the contrast in (11) (Schwarzschild 1996). Accordingly, if the restrictor in (1b) and (6b) supplied group variables, (1b) and (6b) should be marked, which is not the case.

- (10) a. #Des chats sont souvent intelligents
des cats are often intelligent
b. Des amis intimes se critiquent toujours l'un l'autre
des friends intimate always criticize each other
- (11) a. The rocks in that pile are touching each other
b. #That pile is touching each other

3. Some Extensions.

3.1. Comparative Quantifiers and Collectivity. The account developed above provides insight into an unexplained puzzle related to the interaction of genericity and (non-)collectivity (12) (Winter 2001). We adopt the comparative ellipsis analysis of comparative quantifiers (13a) (Hackl 2000), and the characterization of the comparative operator as denoting a subset relation between two sets of degrees that do not contain zero (13b) (Takahashi 2006). The obligatorily quantificational nature of comparative quantifiers (cf. Kamp and Reyle 1991) results (13c). Now, the felicity of (12a) is due to accommodation of the collectivity presupposition (14a). The markedness of (12b) is due to violation of definedness conditions and no collectivity requirement of *be a team* (cf. Winter 2001) (14b). These problems disappear in a generic environment (14c).

- (12) a. More than three students [met yesterday]
b. #More than three students [were a good team yesterday] (episodic reading)
c. More than three students [can be a good team] (generic reading)
- (13) a. [-er than $[\lambda d_1 d_1 \leq 3][\lambda d [d \text{ many students smoked}]]][d \text{ many students smoked}]$
b. $\| \text{-er} \| := \lambda D_{\langle d, t \rangle}. [\lambda D'_{\langle d, t \rangle}. [D \subset D']]$
c. $\| (13a) \| = 1$ iff $\{d \mid 0 < d \leq 3\} \subset \{d \mid d \text{ many students smoked}\}$ iff
1 student smoked, 2 students smoked, 3 students smoked, 4 (or more) students smoked
- (14) a. $\| [-er \text{ than } [\lambda d_1 d_1 \leq 3][\lambda d_{\{2 \leq d\}} [d_{\{2 \leq d\}} \text{ many students met}]]][d \text{ many students met}] \| = 1$ iff
 $\{d \mid 2 \leq d \leq 3\} \subset \{d \mid d \text{ many students met}\}$
b. $\| (12b) \| = 1$ iff 1 student was a good team, 2 students were good teams/were a good team etc.
(spurious truth-conditions)
c. Ve. Restrictor: $\lambda e. \exists x[\{d \mid d \leq 3\} \subset \{d \mid x \text{ is } d \text{-many students}\}]$.
Nuclear Scope: $\lambda e. \exists x[x \text{ is a good team in } e]$.

3.2. English Bare Plurals. English bare plurals sometimes need to be treated as pluralized indefinite NPs. Since the locus of collectivity is in the main predicate, different types of VPs influence the kinds of events considered – compatibility with both distributive and non-distributive predicates results (15).

- (15) a. Swedes [have blue eyes] (\approx Every Swede has blue eyes)
b. Swedes [like each other] (\approx Every group of Swedes only has members that like each other)

4. References.

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