EXHAUSTIVITY, HOMOGENEITY AND DEFINITENESS

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In this paper, it will be argued that the Homogeneity Presupposition (Fodor 1970, Loebner 2000, Schwarzschild 1993) does not provide an adequate account of the tendency of plurals to obtain exhaustive, 'any'-interpretations in negative contexts. It is argued that Krifka's (1996) rule for plural predication would do better if it were restricted to arguments which are in some sense definite. An analysis is sketched which locates the optionality of plural interpretations in definite noun phrases rather than in the predication.

1. The HP account of 'any' readings

The tendency for definite plurals in (1a,b) to be interpreted exhaustively cannot be accounted for simply in terms of their denoting the maximal set of children:

1. a. Mary saw the children
   b. Mary didn't see the children

In particular, the reading of (1b) according to which Mary doesn't see any of the children is problematic since it cannot always be attributed to scope. In (2) the 'not any' construal is still prominent in spite of the fact that the plural noun phrase could not move/scope above the negative element:

2. No_i woman likes the children in her_i care

A Homogeneity Presupposition (HP) has been proposed to account for these intuitions: A definite plural presupposes that each individual in its denotation behaves the same with regard to the predicate with which it combines. (3) represents an implementation for one-place plural predications:

3. $*P(X) = 1 \text{ iff } \forall x[x \in X \rightarrow P(x)]$
   $0 \text{ iff } \forall x[x \in X \rightarrow \neg P(x)]$ Undefined otherwise

For Schwarzschild (1993) the HP results from the interaction of the closure operator on distributive predicates and his four-valued semantics. For others, such as Loebner (2000), the HP is a more general phenomenon. The latter view seems supported by the fact that the phenomenon is not limited to plural predications. In (4) and (5) below, the (b)-examples are most readily understood to suggest that no part of the relevant activity was undertaken.

4. a. John walked to the store
   b. John didn't walk to the store
5. a. John read the book
   b. John didn't read the book

It is well known that the 'completeness' implications of the (a)-examples are very defeasible - as where 'the book' in (5) is the bible, or where the sentence is modified by 'on his lunch break'. Similarly the HP-effect in the (b) cases.

Given that this is a general and independent phenomenon, it seems a good place to start to explain the problematic 'any' construals of plurals where scope-taking is not possible. However, there are some criticisms that one could make of this account. First, that the effect should be thought of as due to a presupposition of *homogeneity* is questionable. It seems that, at least with 'any' readings of plurals, the effect can be cancelled easily by invoking contextual factors which do not particularly conflict with the idea of homogeneity. In (6a,b), the 'not all' construals are made prominent but context does not conflict with the putative HP:

6. a. No farmer vaccinated the donkeys in his care by the deadline
   b. Mary was charged with contempt of court because she didn't answer the judge's questions.

Moreover, the 'any'-effect can occur where the HP would be implausible. For (7) the 'any' reading is prominent and yet it is not so plausible that the gang members would be caught all-or-none:

7. The gang members dispersed to the four corners of the world after the bank robbery, and the police haven't found them yet.

More seriously, it seems we obtain the 'any' readings in the absence of negation - i.e. where the HP account predicts the 'all' construal. In fact, they become prominent in DE contexts generally - cf (8) which has a prominent 'any'-reading

8. Every/No farmer who abused the donkeys in his care was prosecuted

This problem also emerges for embedded questions. Consider: the 'any' reading is equally available for both (9a) and (9b). If we were to use the HP to derive the reading for (9a), we ought to similarly accommodate the HP for (9b) - but this should result in the reading where Mary wonders whether John ate all the cookies:

9. a. Mary doubts that John ate the cookies
   b. Mary wonders whether John ate the cookies

2. Krifka's Alternative

Taking together the problematic data in (6-9) and the idea that the 'any'-effect has something to do with how we understand predications generally, (4-5), it is tempting

to take the following line: Natural language semantics leaves open to some extent what kinds of states of affairs would verify certain predications. By a pragmatic process (complementary to Q-implicature) we tend to draw inferences about the class of situations a given predication is about - effectively coercing the interpretation of the predicate. The effect of the guiding interpretive principle is usually described in terms of the Strongest Meaning Hypothesis (see Dalrymple et al 1998).

Krifka (1996) advocates applying this line of thinking to plural predications:

> "If a predicate P applies to a sum individual x, grammar does not fix whether the predication is universal ($\forall$y[y $\subseteq$ x $\rightarrow$ P(y)]) or rather existential ($\exists$y[y $\subseteq$ x $\wedge$ P(y)]), except if there is explicit information that enforces one or the other interpretation."

This goes together with a version of the SMH. As such we can now predict why the 'any' readings are favoured in DE contexts, and so forth. We also understand the relation between the presence of the favoured readings and contextual factors.

However there are problems with this proposal. Consider that (10) can be understood so that 'two cookies' is both non-specific and narrow scope:

10. No one ate two cookies.

On this kind of reading, the sentence can only be understood in the weaker 'not two' way. There seems to be no conceivable context where it gets understood as 'No one ate any cookies'. And yet this ought to be the favoured understanding according to Krifka's proposal - assuming 'two cookies' quantifies over collections of cardinality two. A similar problem seems to arise with conjunctions. It is difficult to understand (11) to mean that no boy invited either parent:

11. No boy invited his mother and (his) father to the school concert

If we look back to the cases where Krifka's account seems to work, they involve plural definite descriptions (or other definites). The account seems to have come unstuck when we looked at non-definite plural forms in (10) and conjunctions (11).

It is an interesting fact, however, that when 'two N' is specific, the 'any' reading readily re-appears in DE contexts. E.g. where 'two internet sites...' in (12) is specific, quantification is duly construed as being over people who gave to *either* site:

12. No one/Everyone who gave money to two internet sites selling plots on Mars complained to the police

Examples can be multiplied - consider (13) where again binding limits scope-taking:

13. No politician likes to answer two questions about his private life {whether he has inhaled or had an extra-marital affair}

As an aside, it is worth noting that (12) provides a counter-example to the claim by Reinhart 1997 and others that exceptional wide scope specific indefinites cannot receive a distributive, 'any' reading. Geurts (2002) gives others but uses this data to

support a movement account of specifics. A third alternative is offered below.

Regarding conjoined noun phrases, Szabolcsi & Haddicam (2004) note that Krifka's predicted readings are preferred in a number of languages including Hungarian. S&H claim that the 'neither...nor' reading is available for English informants only under certain conditions: either when the individuals are a 'package' (physics and algebra vs hockey and algebra) or where there is some contextual expectation that the individuals 'come together'. Although this characterisation is difficult to square with (11) above (since mothers and fathers ought to be easily thought of as a package) there seem to be genuine 'any' readings with conjunctions. Consider for instance that Philby, Burgess & MacLean were a famous cohort of Cold War double-agents, then (14) can be understood to involve quantification over people who were briefed by any of the three:

14. Everyone who was briefed by Philby, Burgess and MacLean was misinformed

One way to recast the generalisation in S&H is to say that the 'neither...nor' readings of conjunctions are a possibility in English (if not all languages) where the conjunction is understood in a 'definite collection' manner.

3. An Alternative Perspective

Given the above considerations, there is reason to doubt that Krifka's line of thinking will work for plural predications. I.e., it seems that (in the non-specific case) for 'John read two books' to be true, John has to have at least dipped into each of a collection of two books. Further, since the problematic 'any' readings seem to emerge only when the noun phrase is definite or specific, it may be that we could look to these noun phrases as the location of the underspecification. The account sketched in the rest of this paper does just that. To this end, it is assumed that descriptions are just existential QNPs requiring contextual restriction like all QNPs. The potential variability is due to the manner in which the presuppositions of plural definites/specifics affect domain restriction of their interpretation.

3.1. The interaction of the semantics and pragmatics of descriptions

While it has appeared puzzling why the 'any'-reading emerges in cases like (2), no one is much surprised when the same readings occur for non-definites:

15. No one saw children in the park

But there is a sense in which this is just as problematic for accounts which treat descriptions as (complex) terms denoting individuals - as do choice function accounts. In that case, an otherwise unmotivated local ∃-closure mechanism needs to be invoked to bind the choice function variable in the scope of the negative quantifier. By contrast, the reading of (15) is entirely unsurprising if we assume

indefinite descriptions are existential quantificational phrases. The main motivation for the choice function account over the quantificational account of indefinites comes from extraordinary scope readings of specific indefinites (Reinhart 1997). But there is a good quantificational alternative according to which specifics involve domain restriction down to a condition which the speaker could provide (see Schwarzschild 2002, Breheny 2003). In the singular case, this effectively makes quantification over a domain of one. In the plural case, however, it is an open question whether restriction would always result in a domain of one (the maximal set satisfying the speaker-dependent condition). As already suggested, specific indefinites enter into the 'all'/'any' alternation in, respectively, UE & DE contexts. So, we understand (16a) so that every student looked for all of certain linguists at the conference; while for (16b) no student looks for any of certain linguists:

16. a. Every student$_i$ looked for certain$_i$ linguists at the big conference
    b. No student$_i$ looked for certain$_i$ linguists at the big conference

On a quantificational account of (16a,b), the specific indefinite's domain gets restricted by *certain_ linguist$_u$(i)* which (relative to student *i*) expresses the property of having whatever property of collections the speaker has in mind in uttering the noun phrase, u. Now, suppose that in uttering (16a) I have in mind the idea that each individual student hero-worships one or more linguists. In that case, what I could just as well have in mind is either the condition *λX[*linguist(X) ∧ *worships(X)(i)]* or *max(λX[*linguist(X) ∧ *worships(X)(i)])* (where *max* ≡ *λXλY[Y = U{Z:X(Z)}]*). So there is an underdeterminacy here as to what condition I have in mind - regardless of the idea behind that condition. As such, it could be presupposed either that I have the maximal or non-maximal condition in mind. The choice of implication would in turn be driven by the pragmatic condition which maximises informativity in other SMH cases.

Turning now to definite descriptions, we can ask what makes them different from indefinites. One common way to answer this question is to say that definiteness serves to signal that there is a salient condition (accessible to the audience) by which one can identify the individual or set of individuals 'under discussion'. Let's consider where the condition is made salient by discourse:

17. Some students and some faculty attended the workshop. The students were charged a reduced rate.

Again we can observe that more than one potential restrictor for the definite is made salient by the previous discourse: *λX[*student(X) ∧ *attended_WS(X)]* or *max(λX[*student(X) ∧ *attended_WS(X)])*. Given the attested variability in quantificational force of definites, it seems that these offer equally available restrictions on quantification. One way to think of how this comes about is that the identifying condition on the individuals in question is just *λx[student(x) ∧*

attended_WS(x)] but that in restricting the (((et),t),(((et),t),t)) existential determiner of the definite description the maximal singleton restrictor is just one option. The assumption is that the SMH chooses.

It seems reasonable to pursue the idea that in both the definite and the specific case, it is assumed that identifying conditions correspond to expressions of properties of individuals. If so, the uniqueness implication on singulars would come via the number marking which signals that a singleton is under discussion. I.e. where an *identifying* condition is for a singleton, it follows that that condition is only satisfied by one thing. Along similar lines, one can argue that in 'the two students', 'two' contributes to the presuppositions of the description. Suppose that the second segment in (17) above is, 'The two students were charged a reduced rate.'. Then there would be an indicated identifying condition *λx[student(x) ⩘ attended_WS(x)]* and in addition a presupposition that this condition is satisfied by two individuals. Similarly for '(a certain) two students', the number marking arguably contributes to the presuppositions about the collection the speaker has 'in mind'. In both cases, there is underspecification as to how the restrictor of the plural description is fixed leading to the possibility of 'any' readings as in (12-13) above. As for definite conjunctions ('Philby, Burgess and MacLean'), these could be covert plural definite descriptions with the named individuals providing the identifying condition (λx [x = Philby ⩖ x = Burgess ⩖ x = MacLean]).

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