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Two kinds of long-distance indefinites

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1. Introduction

Indefinites can often be interpreted as if they had scoped from a syntactic island. For example, (1) has a *long(-distance) intermediate scope* reading, which may be credited to the LF in (2).

(1)Every student read every book **some teacher** had praised.
(2)[every student] λ_1[[**some teacher**] λ_2[t_1 read every book t_2 praised]]

It has been proposed that such long scope shifts can be eliminated if it is assumed that *some* and *a* can be variables ranging over (Skolemized) choice functions (Reinhart 1997, Winter 1998, Kratzer 1998, Matthewson 1999, Chierchia 2001). In (3), *some* translates as a choice function variable which is existentially closed at an intermediate position (see Reinhart, Winter). In (4), *some* translates as a Skolemized choice function variable whose existential closure takes widest scope (see Matthewsson, Chierchia).

(3)[every student] λ_1[$\exists f$[t_1 read every book [f **teacher**] praised]]
(4)$\exists f$[[every student] λ_1[t_1 read every book [f_1 **teacher**] praised]]

(3) and (4), which are equivalent to each other, are also equivalent to (2).[1] This points to the two distinct choice function accounts of long scope described in (5) and (6) (cf. Chierchia).

[1]Actually, (3) and (4) are equivalent to (2) only if we take the set of teachers to be non-empty. For the sake of the argument, let us assume that this assumption can be justified. The same sort of comment applies to all the other relevant examples below.

(5)"multiple choice" analysis

Indefinite articles can be choice function variables, bound by freely distributed existential closure (see (3)).

(6)"∃ sloppy choice" analysis

Indefinite articles can be Skolemized choice function variables, bound by existential closure which takes widest scope (see (4)).

Building on observations due to Chierchia, this talk argues that (5) and (6) both undergenerate and overgenerate. Both analyses generate unattested readings for indefinites in non-upward monotone contexts. And neither analysis appears to account for the scope behavior of long-distance indefinites with *a certain*. These seem to call for a sloppy choice function analysis where the function variable remains free (Kratzer).

2. Monotonicity and undergeneration

Chierchia observes that ∃ sloppy choice fails to derive long intermediate readings when the higher DP is not upward monotone. For example, (7) can be read as the negation of (1) in its long intermediate reading.

(7)Not every student read every book **some teacher** had praised.

(8) [not every student] λ_1[$\exists f$[t_1 read every book [f **teacher**] praised]]

(9) $\exists f$[[not every student] λ_1[t_1 read every book [f_1 **teacher**] praised]]

The LF (8) accounts for this reading, but (9) is too weak. For suppose Smith and Baker are the teachers, Mary and Sue are the students, both Sue and Mary read every book Smith praised, but only Sue read every book Baker praised. In this scenario, the relevant reading of (7) is judged false, yet (9) is true. For we can find a Skolemized choice function f such that f(Mary)(the teachers) = Baker, which verifies (9). With Chierchia, we conclude that the ∃ sloppy choice analysis undergenerates.

3. Monotonicity and overgeneration

To see the logic of ∃ sloppy choice more clearly, consider the simpler case in (10). In this case, ∃ sloppy choice yields a narrow scope existential reading. That is, (11a) is equivalent to (11b).

(10) Every student read **a book I had praised**.

(11) a. $\exists f$[[every student] λ_1[t_1 read f_1 **[book I had praised]**]]

b. [every student] λ_1[[**a book I had praised**] λ_2[t_1 read t_2]]

Here is the sketch of an equivalence proof. We first consider the lambda abstracts in (12) and show that they relate as in (13). Then we exploit right upward monotonicity of *every* to prove the claim.

(12) a. λ_1[t_1 read f_1 **[book I praised]**]

b. λ_1[[**a book I had praised**] λ_2[t_1 read t_2]]

(13) a. For every g, if I praised any book, then $\|(12a)\|^g \subseteq \|(12b)\|^g$

b. For every g, if I praised any book, then for some Skolemized choice function f, $\|(12b)\|^g = \|(12a)\|^{g\ f/f}$.

This case study suggests that, more generally, (14) and (15) below are equivalent whenever δ is right upward monotone.[2]

(14) $\exists f$[[δ α] λ_i[[f_i β] γ]]

(15) [δ α] λ_i[[*some* β] γ]

The ∃ sloppy choice analysis is in fact committed to this equivalence, as otherwise long intermediate readings could never be derived as intended. But, of course, we should now ask what happens if δ is not right upward monotone. Take (16), where *no*

2 Actually, (14) and (15) may certainly fail to be equivalent if there is a free occurrence of f in δ, α, β, or γ. But we can safely assume that there is no such occurrence.

substitutes for *every* in (10) and (11).

(16) No student read **a book I had praised**.

(17) a. $\exists f$[[no student] λ_1[t_1 read f_1 **[book I praised]**]]

b. [no student] λ_1[[**every book I praised**] λ_2[t_1 read t_2]]

It turns out that in this case, ∃ sloppy choice interprets the indefinite as a narrow scope universal, that is, (17a) is equivalent to (17b)! The proof is analogous to the one on (11). First we show that (18a,b) relate as in (19). Then we exploit right <u>down</u>ward monotonicity of *no* to prove the claim.

(18) a. λ_1[t_1 read f_1 **[book I praised]**]

b. λ_1[[**every book I praised**] λ_2[t_1 read t_2]]

(19) a. For every g, if I praised any book, then $\|(18b)\|^g \subseteq \|(18a)\|^g$

b. For every g, if I praised at least one book, then
for some Skolemized choice function f, $\|(18b)\|^g = \|(18a)\|^{g\ f/f}$.

More generally, if we insist on the equivalence of (14) and (15) for right <u>up</u>ward monotone δ, we are also committed to the equivalence of (14) and (20) for right <u>down</u>ward monotone δ.

(20) [δ α] λ_i[[*every* β] γ]

Evidently, the latter equivalence is not at all welcome. Sentence (16) cannot mean that no student read every book I praised. So we need to somehow exclude (17a) as a LF for (16). Presumably, this means that LFs of the form (14) should be banned for any choice of δ.

4. Multiple choice and monotonicity

As it stands, ∃ sloppy choice both undergenerates (section 2) and overgenerates (section 3). What about the multiple choice analysis? We have not seen it undergenerate - it does derive the long intermediate reading of (7). Also, if we ban Skolemized choice function variables, it does not derive any unattested reading for (16). Unfortunately, however, multiple choice overgenerates in other cases. First consider (21) below. If no two candidates wrote exactly the same papers (as seems plausible), the LF (22a) turns out equivalent to (22b), hence equivalent to (23).

(21) Every candidate submitted **a paper he had written**.

(22) a. $\exists f$[[every candidate] λ_1[t_1 submitted f **[paper he$_1$ had written]**]]

b. $\exists f$[[every candidate] λ_1[t_1 submitted f_1 **[paper he$_1$ had written]**]]

(23) [every candidate] λ_1[[**a paper he$_1$ had written**] λ_2[t_1 submitted t_2]]

This equivalence is welcome. However, turning to (24), it commits one to the unwelcome equivalence of (25a) and (26)!

(24) No candidate submitted **a paper he had written**.

(25) a. $\exists f$[[no candidate] λ_1[t_1 submitted f **[paper he$_1$ had written]**]]

b. $\exists f$[[no candidate] λ_1[t_1 submitted f_1 **[paper he$_1$ had written]**]]

(26) [no candidate] λ_1[[**every paper he$_1$ had written**] λ_2[t_1 submitted t_2]]

Thus $\exists$ closure must be restricted in its distribution. We need to stipulate that no operator can bind into a choice function indefinite from within the scope of its $\exists$ closure. Given the need for this constraint, call it *integrity condition*, one may conclude that long intermediate scope is after all better analyzed in terms of long distance scope shifts. Be this as it may, what we will see is that neither of these devices copes with *a certain* indefinites.

5. Functional indefinites

Winter (1998) observes that (27a) might be used to convey that every mother hating child will develop a complex. Standard scope shifting does not derive this *functional* reading. Winter credits it to the LF in (27b).

(27) a. Every child who hates **a certain woman he knows** will develop a serious complex.

b. $\exists f$[every [child λ_1[t_1 hates f_1 **[woman he$_1$ knows]**]] [will develop a serious complex]]

Interestingly, (27b) is in conflict with our integrity condition. Does this condition have to be weakened? The answer appears to be no. For it seems that (27b) is weaker than any attested reading of (27a), including the functional one. *Every* being left downward monotone, (27b) says that every child who hates every woman he knows will develop a complex. While (27b) is thus not adequate, a minimal modification seems sufficient. Following Kratzer (1998), we omit $\exists$ closure and interpret f is a function the speaker has in mind, e.g. the mother function.

6. Two kinds of long-distance indefinites

Kratzer proposed that functional construals are responsible for all long intermediate readings of indefinites (in extensional contexts). The data presented below challenge this view. More generally, they challenge the popular thesis that all long-distance indefinites (in extensional contexts) are subject to the same analysis (e.g. Reinhart, Kratzer, Winter). It seems true that functional indefinites can always give rise to something like long intermediate scope. Thus (28) can be judged true if every boy finished the cookies his mother brought, but none of those his sister brought.

(28) Every boy finished the cookies **a certain woman he knows** had brought.

But it seems that not all long intermediate indefinites can have functional readings. In its only sensible reading, (29a) says that for every boy, there is some person such that the boy ate all the cookies that person had brought. Thus, (29a) allows for intermediate scope of *someone*.

(29) a. Each boy ate all the cookies **someone** had brought.

b. Every boy who hates **someone** will develop a serious complex.

In (29b), *someone* might, perhaps, take widest scope, in which case it says that there is someone such that every boy who hates her will develop a complex. The indefinite may also take narrow scope, in which case (29b) says that every boy who hates anyone will develop a complex. But no third reading is available, in particular no functional reading of the sort found in (27a). Similar descriptions apply to the example pairs in (31) and (30).

(30) a. More than one boy devoured every cookie **a girl from his class** had brought.
b. Almost no boy invited **a girl from his class**.

(31) a. Most students have studied every article that **some professor** has published.
b. No student who **some professor** had invited showed up.

I conclude that not all long intermediate indefinites are functional. Moreover, so-called long intermediate readings with functional and non-functional indefinites can be shown to be rather different in nature. While both cases in (32) allow for a reading in which the indefinite has neither wide nor narrow ∃ scope, the two readings are not of the same kind.

(32) a. No boy finished the cookies **someone** had brought.
b. No boy finished the cookies **a certain woman he knows** had brought.

Suppose some boy finished the cookies a woman he knows had brought. This assumption makes (the relevant reading of) (32a) false whereas (the relevant reading of) (32b) may still be true. And the fact that no boy finished the cookies his mother had brought may be sufficient for the truth of (32b), but certainly not for the truth of (32a). Similar descriptions apply to the example pairs in (33) and (34).

(33) a. No student has studied every article that **some professor** has published.
b. No student has studied every article that **a certain professor** has published.

(34) a. At most one boy ate every cookie **a girl from his class** had brought.
b. At most one boy ate every cookie **a certain girl from his class** had brought.

Of course, these judgments are precisely what one should expect. Scope shifting derives the relevant reading of (32a) as shown in (35a). Free sloppy choice assigns (32b) the LF (35b).

(35) a. [no boy] λ_1[[**someone**] λ_2[t_1 finished the cookies t_2 had brought]]

b. [no boy] λ_1[[t_1 finished the cookies $\boldsymbol{f_1}$ **[woman he$_1$ knows]** had brought]]

Given right downward monotonicity of *no*, (35b) is much weaker than (35a). This is why, in this case, the functional reading does not approximate a genuine intermediate scope reading as well as it does in (28).

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