

## Association with traces and the copy theory of movement

In this talk I give a principled account for the observation that exclusive *only* must associate with a focus within its complement (Tancredi's (1990) **Principle of Lexical Association; PLA**), utilizing the copy theory of movement and associated work on the interpretation of traces. Previous explanations for this fact come from the idea that traces cannot be F-marked. I argue contra Beaver and Clark (2008) that traces (lower copies of movement chains) can in fact be F-marked and that this is exemplified in F-marking contained in quantifiers which undergo QR. Instead, PLA effects arise through the interpretation of focus alternatives of the predicate in both the higher and lower copies of the moved constituent. When the higher copy and lower copy are not both under the scope of the exclusive operator, we yield incompatible requirements on the variables being quantified over, causing either presupposition failure or contradiction.

### PLA and the state of the art

Tancredi (1990) described the ungrammaticality of (1) as due to the PLA: a requirement that *only* associate with a constituent in its c-command domain at S-structure. Beaver and Clark (2008) argue that this is an expected result *if traces cannot be F-marked*: without F-marked material in the complement of *only* the focus alternatives computed will be a singleton set and we cannot make a meaningful assertion. In support of this view, Beaver and Clark note that “by definition, extraction gaps cannot be prosodically prominent” (Beaver and Clark, 2008, 172).

- (1) \* [Which boy]<sub>i</sub> does John only like *t<sub>i</sub>*? (Tancredi, 1990)  
Intended: ‘Which boy *x* is such that John only likes [*x*]<sub>F</sub>?’
- (2) ✓ Which boy is such that<sub>i</sub> John only likes [*him<sub>i</sub>*]<sub>F</sub>?

Example (2) shows that a bound variable, however, can indeed carry F-marking and give us the intended reading. This contrast between unpronounced traces and bound variables lends credence to this hypothesis.

### F-marking in the lower position: evidence from QR

Aoun and Li (1993) noted that the PLA seems to also affect the possible scopes of QR: (3) does not have an inverse-scope reading due to the *only* and the F-marking on (part of) the QP. That the scope of focus-sensitive *only* indeed interferes with QR can also be verified in Antecedent Contained Deletion examples which must invoke QR in order to satisfy the identity requirements on ellipsis (Larson and May, 1990, a.o.). The two ellipsis resolutions in (4a) correspond to a choice of how high the quantifier is raised to—either to the edge of vP<sub>1</sub> or vP<sub>2</sub>. However, in (4b) the larger ellipsis resolution is unavailable, indicating an inability of the QP to move across *only* to the edge of vP<sub>1</sub>.

- (3) Someone only loves [<sub>QP</sub> every [boy]<sub>F</sub> in the room]. (Aoun and Li, 1993)  
✓ someone > every boy, \*every boy > someone
- (4) a. John [<sub>vP<sub>1</sub></sub> wanted to [<sub>vP<sub>2</sub></sub> read [<sub>QP</sub> every book that Mary did \_\_\_\_]. ✓“want to read,” ✓“read”  
b. John [<sub>vP<sub>1</sub></sub> wanted to **only** [<sub>vP<sub>2</sub></sub> read [<sub>QP</sub> every book that [M]<sub>F</sub> did \_\_\_\_]. \*“want to read,” ✓“read”

As a covert movement operation, QR has been analyzed as movement with pronunciation of the foot of the chain. Examples such as (3) and (4b) then arguably realize F-marking on the lower position, corresponding to a trace position of an overt movement chain. *When the full paradigm of the PLA including its effect on QR is considered, its explanation as an inability to realize F-marking on traces becomes untenable.*

### Solution: F-marking in both higher and lower copies via the copy theory of movement

Under the copy theory of movement, movement does not leave “traces” but instead leaves full, lower copies. The lower copy is then converted into a definite description (with the restriction that it be equal to the variable in question) through a process of **Trace Conversion (TC)** (Fox, 2002; Rullmann and Beck, 1998).

- (5) “John read many books.” QR: [many books] λ*x<sub>i</sub>* John read [many books]<sub>i</sub>  
TC: [many books] λ*x* John read [the book *x*]

F-marking itself is simply a syntactic feature on constituents (Jackendoff, 1972), and thus when a constituent

containing F-marking moves, the F-marking is retained on both copies. This triggers the generation of focus alternatives *in both positions*. If this movement happens within the scope of *only* (Case I), we yield a meaningful assertion by elimination of self-contradictory alternatives when evaluating *only*. However, this elimination of contradictory alternatives does not occur when the movement is out of the scope of *only* and we yield fatal presupposition failure (Case II).

Case I (XP containing F-marking moves within the scope of *only*):

“Every boy” QRs to the edge of vP, within the scope of *only*, and the lower copy undergoes TC (a). There are now two F-marked *boys* in the structure, and they each introduce the alternatives {*boy, girl*}. Compute  $[[vP]]^f$  pointwise, resulting in four alternatives (b). (Box indicates preajcent.) Eliminate alternatives which produce logical contradictions (strikeouts in b). Compute *only* as normal: asserting the conjunction of negations of alternatives which are not entailed by the preajcent. The resulting assertion (c) is well-formed.

- (3a) a. TC: Someone  $\lambda y . \text{only } [_{vP} [\text{every } [\text{boy}]_F] \lambda x . y \text{ loves } [\text{the } [\text{boy}]_F x] ]$   
 b.  $[[vP]]^f = \left\{ \begin{array}{l} \boxed{[\text{every boy}] \lambda x . y \text{ loves } [\text{the boy } x]}, [\text{every boy}] \lambda x . y \text{ loves } [\text{the girl } x], \\ \text{every girl } \lambda x . y \text{ loves } [\text{the boy } x], \text{every girl } \lambda x . y \text{ loves } [\text{the girl } x] \end{array} \right\}$   
 c. Assert: there exists a person *y* for which it is not the case that *y* loves every girl. ☺

Case II (XP containing F-marking moves out of the scope of *only*):

“Every boy” QRs out above *only*, and the lower copy undergoes TC (a). Only the lower copy is within the vP, so there are two alternatives computed at vP (b). The exclusive assertion then makes reference to the definite description “the girl *x*” (c). The higher *boy* will trigger alternatives, but the assertion simply asserts the ordinary semantic value of the root, meaning we will quantify over “every boy *x*.” The complete computation (d) attempts to compute the definite description “the girl *x*” for “every boy *x*,” *necessarily resulting in presupposition failure for every individual in the quantification!*

- (3b) a. TC:  $[\text{every } [\text{boy}]_F] \lambda x . \text{someone } \lambda y . \text{only } [_{vP} y \text{ loves } [\text{the } [\text{boy}]_F x] ]$   
 b.  $[[vP]]^f = \{ \boxed{y \text{ loves } [\text{the boy } x]}, y \text{ loves } [\text{the girl } x] \}$   
 c.  $[[\text{only } vP]] = \neg y \text{ loves } [\text{the girl } x]$   
 d. Assert: for **every boy** *x*, there exists *y*, such that it is not the case that *y* loves [the girl *x*] ☹

### The contrast between traces and bound variables

If the PLA is not due to a simple lack of F-marking within the complement of *only*, we lose the trivial explanation for the contrast in (1–2). However, the contrast above (Case I–II) crucially arises due to the presuppositions introduced by the definite description interpretation of lower copies via TC. Bound variables, however, are simple variables and thus can host F-marking *without introducing conflicting presuppositions*.

- (6) No boy is such that<sub>*i*</sub> John only likes  $[\text{him}_i]_F = [\text{no boy}] (\lambda x . \text{only John likes } [x]_F)$  ☺

### Prediction: the PLA does not affect F-marked quantificational determiners

As TC retains all of the predicative restriction of a quantifier but replaces the determiner with  $\iota$ , F-marking on the determiners themselves are predicted to be immune to the PLA. As alternatives are not introduced in the two copies of the predicate, we avoid the issues in Case II above. This prediction is borne out.

- (3') Someone only loves  $[ [\text{most}]_F \text{ boys}]$ .  $\checkmark$  someone > most boys,  $\checkmark$  most boys > someone

### Summary and implications

The novel proposal presented here gives a unified explanation for PLA effects on both overt and covert movement, in a manner compatible with our recent, independently-motivated understanding of the copy theory of movement. The distinction drawn here between bound variables and traces highlights the importance of our semantic denotations for “variables,” particularly as the lack of focus-islands has been used as an argument for non-movement analyses of *wh*-in-situ (Aoun and Li, 1993).