**Updating alternatives: focus on bound pronouns** — *Clemens Mayr – Harvard University*

**Overview** A theory is developed how to deal with focused bound pronouns while still treating them as plain bound variables. Two steps are needed: First, focus operators are inserted locally, in the scope of the quantifier. Second, it is required that focus must add new alternatives.

**The problem** Jacobson (2000) and Sauerland (2000, 2008) observe that bound pronouns can bear optional stress (1a)-(1b) – that is, contrastive stress in (1a).

(1) a. Every student cut his (own) arm, and every TEACHER cut HIS arm

  b. Every student cut his (own) arm, and every TEACHER cut his arm

Two questions arise w.r.t. (1). First, if both the stressed pronoun (1a) and the unstressed one (1b) are to be treated as bound variables, it is difficult to see how the pronoun in conjunct 1 would contrast with the one in conjunct 2 in (1a) but not in (1b). Since (1b) is grammatical, a principle like AvoidF (Schwarzschild 1999) that strives to minimize the number of foci would dictate that (1b) should be preferred over (1a). Second if we assume that bound pronouns have individual-denoting expressions as their alternatives, the focus value of conjunct 2 in (1a) would be (2).

(2) $[\![C2]\!]^f = \{p : \exists P_{\langle et \rangle}.\exists y_{\langle e \rangle}[p = \forall x[P(x) \rightarrow \text{cut}(x, y\text{'s arm})]\}$

Simplifying greatly, for Rooth (1992) focus is licensed if both the ordinary value of the antecedent constituent and of the utterance are members of the focus alternatives and these furthermore contrast. But neither the ordinary value of conjunct 1 nor the one of conjunct 2 is a member of the set in (2). Focus should not be licensed. A parallel problem obtains in Schwarzschild's 1999 theory.

**New observation** Sauerland (2000, 2008) (also cf. Jacobson (2000)) argues that (1a) and (1b) differ in that the bound pronoun in the former is a bound E-type pronoun (3) but not in the latter. The function in the pronoun is treated as a presupposition. The function attracts the focus.

(3) a. every student $\lambda_1[t_1$ cut the$_1$ student's arm]

  b. every teacher$_F$ $\lambda_1[t_1$ cut the$_1$ teacher$_F$'s arm]

The focus value for (3b) is (4). Now both the value of conjunct 1 and conjunct 2 are members of the alternatives in (4) and they also contrast. Focus on the pronoun should be licensed. Moreover, (1b) cannot block (1a), because the plain variable version does not compete with the E-type one.

(4) $[\![(3b)]\!]^f$ = defined iff $\forall x, f(x) = 1$, if defined $\{p : \exists P.\exists f_{\langle et \rangle}[p = \forall x[P(x) \rightarrow \text{cut}(x, x\text{'s arm})]\}$

We find a problem for this view in cases where the restrictor of the quantifier and the function in the pronoun do not co-vary. Focus on the bound pronoun is also possible with additive *too*:

(5) Every director discussed his film, and every PRODUCER discussed HIS film, too

Following (Heim 1992:189) (also cf. Geurts and van der Sandt (2004)) we assume the anaphoric entry for *too* in (6). It focus-associates with $[\![X]\!]$ and presupposes that there is an alternative to $[\![X]\!]$ different from it such that the predicate used is true of that alternative.

(6) $\phi([\![X_F]\!])[\![too_i]\!]$ = defined iff $\exists y_i \in [\![X]\!]^f$ and $\phi(y_i) = 1$, if defined $\phi([\![X_F]\!])$

With the LFs in (7) where *too* focus-associates with the restrictor of the quantifier, (7b) presupposes that every director discussed his film and every director is a producer. (7a) does not guarantee this.

(7) a. every director$_5$ $\lambda_1[t_1$ discussed [the$_1$ director]'s film]

  b. every producer$_F$ $\lambda_1[t_1$ discussed [the$_1$ producer]$_F$'s film] too$_5$

We cannot amend this by stipulating that *too* associates with both instances of *producer* in (7b). *too* does not associate with more than one focus. As (8) shows it cannot have the meaning in (8a) where exactly this would be required.

(8) John$_6$ kissed Mary$_8$, and BILL$_F$ kissed SUE$_F$, too$_{6,8}$

  a. *'John kissed Mary, and in addition Bill kissed Sue.'

  b. ?'John kissed Mary, and Bill kissed Mary and in addition Sue.'

**1. Local focus operators** We propose that (at least) focus operators associating with bound pronouns must be inserted locally – that is, in the scope of the quantifier binding them. We follow Rooth (1992) in assuming that the $\sim$-operator interprets focus. $\sim$ takes a contextually determined set $C$ as an argument and presupposes that $g(C)$ is a subset of the focus value of $\sim$'s sister.

(9)  $[\![\sim X]\!]$ = defined iff $g(C) \subseteq [\![X]\!]^f$, if defined $[\![X]\!]$

Conjunct 2 in (1a) has the LF in (10). We require that the $\lambda$-abstractor is below the $\sim$-operator, i.e., inside the alternatives. The semantics for (10a) is then as in (11). We assume that presuppositions project universally from the scope of the quantifier (Heim 1983). The first presupposition requires that for each teacher $x$ the set of alternatives $g(C)$ contains predicates of the form *x cut a's arm, a* an individual. $g(D)$ is of the form *every x of some particular property cut x's own arm*.

(10)  a.  $\sim D$ [every teacher$_F$][$\sim C[\lambda_1[t_1$ cut $1_F$'s arm]]]

  b.  $[\![(10a)]\!]$ = defined iff $\forall x[\text{teacher}(x) \rightarrow g(C) \subseteq \{\lambda x.\text{cut}(x, y\text{'s arm}) \mid y \in D_e\}$, and
  $g(D) \subseteq \{\forall x[Q(x) \rightarrow \text{cut}(x, x\text{'s arm}) \mid Q\}$,
  if defined $\forall x[\text{teacher}(x) \rightarrow \text{cut}(x, x\text{'s arm})]$

**2. Updating alternatives** But why is the focus on the bound pronoun licensed? I propose the focus-requirement in (11). Each sentence has $\sim$ appended to the top. Further $\sim$s are optional.

(11)  A proposition $p$ denoted by sentence $\phi$ can be added to $C$, iff there is a $q$ denoted by an antecedent $\psi$ such that $q \subseteq [\![\phi]\!]^f$ and $q \neq [\![\phi]\!]$.

Moreover, focus on a given constituent embedded in $\phi$ is licensed iff the $g(C)$ that a given focus operator in $\phi$ makes use of is not unaffected by updating the context $c$ with $[\![\phi]\!]$:

(12)  Focus in $\phi$ is licensed iff $g(C_c) \neq g(C_{c+[\![\phi]\!]})$.

In other words, each sentence must have at least one focus to conform to (11). Second, a focus can only be used when new alternatives are added to $g(C)$. For (1a) this means that the two foci are licensed if the following obtains: First, conjunct 2 must add new alternatives of the form *λx.cut(x,a's arm)* to $g(C)$, *a* an individual. The meaning of conjunct 1 provides such alternatives with *a* being some student, as it entails that *cut(a,a's arm)*. Conjunct 2 adds *distinct* alternatives with *a* being a teacher. (12) is satisfied. Second, there must be alternatives of the form *∀x[Q(x) → cut(x, x's arm)*, *Q* some property. Clearly, conjunct 1 provides such an alternative. Conjunct 2 adds a *distinct* one. (12) is again satisfied. The latter also applies to (1b). The theory allows optionality between (1a) and (1b). It would not allow dropping the focus on the restrictor, however. The top $\sim$ would not interpret a focus then. (11) also accounts for the obligatoriness of focus observed by Schwarzschild (1999). The theories differ, however, wrt. which foci are not licensed. Schwarzschild's theory rules out (1a). The present theory does not. The present theory also accounts for unfocusability in Schwarzschild's cases, though, because there $g(C)$ would not be affected by the utterance. (12) also explains the observation made by (Sauerland 2000:175) that the restrictors used must differ in order for bound pronouns to be focused. Only in (13b), but not in (13a) is the $g(C)$ used by $\sim$ attached to the VP affected by uttering the sentence.

(13)  *Discourse:* I didn't expect every teacher to get what she wanted.

  a.  #But, every teacher GOT what SHE wanted.
  b.  In the end, every GIRL got what SHE wanted.

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