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# *De se* reductionism takes on monsters

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A *de se* belief is a belief about oneself from a first person point of view. This differs from merely a *de re* belief about oneself as brought out by mistaken identity scenarios like:

- (1) Karen and Miina just had extreme makeovers. Karen glimpses herself in a mirror and, mistakenly thinking she’s seeing Miina, mumbles “She’s beautiful”. Miina simply thinks “I’m beautiful”.

Both women have *de re* beliefs about themselves, but only Miina has a *de se* belief. The same distinction applies to belief reports:

$$(2) \quad \left\{ \begin{array}{l} \text{Karen believes } \left\{ \begin{array}{l} \text{that she's} \\ \# \text{ to be} \end{array} \right\} \\ \text{Miina believes } \left\{ \begin{array}{l} \text{that she's} \\ \text{to be} \end{array} \right\} \end{array} \right\} \text{ beautiful}$$

As is generally assumed, the 3rd person pronoun construction can report both *de re* and *de se* beliefs, but the infinitival complement can only be read *de se*.

My account starts out with a standard analysis of *de re*:  $x$  believes *de re* of  $y$  that it’s  $P$  iff  $x$  is related to  $y$  via an *acquaintance relation*  $R$  and self-ascribes the property of bearing  $R$  to something  $P$ . I adopt a Lewisian reduction of *de se* as a special case of *de re*, viz. the case where  $y = x$  and  $R$  is equality.

Reductions like this have been attempted before<sup>1</sup>, but arguments against the general reductionist setup have appeared in work on *de se* reports. First of all, Chierchia (1989) argues for separate *de se* and *de re* LFs on the basis of unambiguously *de se* infinitives as in (2). The problem for acquaintance-style definitions of *de re/de se* lies in the fact that they scope the subject of the attitude ( $y$  above) out of the belief operator. This becomes serious if we assume a covert PRO with 1st person features as subject for infinitive complements.<sup>2</sup> In any case, an analysis for embedded first persons interpreted as co-referential with a 3rd person matrix subject is needed if we want to account for Amharic attitude reports glossable as ‘Karen<sub>*i*</sub> believes I<sub>*i*</sub> am beautiful’ (Schlenker 2003).

The present account adopts a simplified version of the acquaintance resolution framework, summarized below. First, add to the DRS language a predicate ‘believe’ with interpretation  $\text{bel} \in [D \times W \rightarrow \wp W]$ :

<sup>1</sup>Von Stechow (1982) (<http://vivaldi.sfs.nphil.uni-tuebingen.de/~arnim10/Aufsaetze/StructuredProp1.pdf>), Reinhart (1990) ([http://www.let.uu.nl/~tanya.reinhart/personal/Papers/De\\_se\\_91.wp.pdf](http://www.let.uu.nl/~tanya.reinhart/personal/Papers/De_se_91.wp.pdf))

<sup>2</sup>In Schlenker’s system the first person feature accounts for the *de se* point of view.

$$(3) \quad \llbracket \text{believe}(x):\varphi \rrbracket^f = \{w \in W \mid \llbracket \varphi \rrbracket^f \supseteq \text{bel}(f(x), w)\}.$$

Next, add ‘center’ to represent the first person, i.e. the source of an utterance or thought:<sup>3</sup>

- (4) a. I am beautiful  
 b.  $[y \mid \text{center}(y) \text{ beautiful}(y)]$   
 c. Miina believes PRO to be beautiful  
 d.  $[x \mid \text{miina}(x) \text{ believe}(x):[y \mid \text{center}(y) \text{ beautiful}(y)]]$

$\llbracket (4d) \rrbracket$  is the proposition that in all of Miina’s belief alternatives the experiencer is beautiful. The remainder of the paper is concerned with deriving representations like (4d) uniformly from surface structure by ‘acquaintance resolution’.

Consider a typical coreferential 3rd person report:

- (5) Karen believes that she is beautiful

We assume that in order for this report to be truly *de re*, the context in which it is uttered should provide a suitable relation of acquaintance (preferably ‘=’) between Karen and the antecedent of ‘she’, i.e. herself. Say the context is (1); representing that and adding the general preliminary *de re* representation of (5), gives (6). The ‘ $\doteq$ ’ stands for *formal* equality ( $\alpha\beta\eta$ -interconvertibility of lambda terms) and the ‘?’ is a trigger to search for an appropriate DRS-part, and then find and apply a unifying substitution for the resulting formal equality.

$$(6) \quad \begin{array}{l} \text{a.} \quad \left[ \begin{array}{l} x \ y \ \left[ \begin{array}{l} \text{karen}(x) \ \text{miina}(y) \ \text{see\_in\_mirror}(x,x) \\ \text{R}(x,w) \doteq? \\ \text{believe}(x): \left[ \begin{array}{l} u \ v \ \left[ \begin{array}{l} \text{center}(u) \ \text{R}(u,v) \ \text{beautiful}(v) \\ \partial[w \mid \text{fem.3.sg.}(w)] \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right] \\ \text{b.} \quad \left[ \begin{array}{l} x \ y \ \left[ \begin{array}{l} \text{karen}(x) \ \text{miina}(y) \ \text{see\_in\_mirror}(x,x) \\ \text{R}(x,x) \doteq? \\ \text{believe}(x): \left[ \begin{array}{l} u \ v \ \left[ \begin{array}{l} \text{center}(u) \ \text{R}(u,v) \ \text{beautiful}(v) \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right] \\ \text{c.} \quad \left[ \begin{array}{l} x \ y \ \left[ \begin{array}{l} \text{karen}(x) \ \text{miina}(y) \ \text{see\_in\_mirror}(x,x) \\ \text{R}(x,x) \doteq \text{see\_in\_mirror}(x,x) \\ \text{believe}(x): \left[ \begin{array}{l} u \ v \ \left[ \begin{array}{l} \text{center}(u) \ \text{R}(u,v) \ \text{beautiful}(v) \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right] \\ \text{d.} \quad \text{R} \mapsto \lambda s \lambda t. \text{see\_in\_mirror}(s,t) \\ \text{e.} \quad \left[ \begin{array}{l} x \ y \ \left[ \begin{array}{l} \text{karen}(x) \ \text{miina}(y) \ \text{see\_in\_mirror}(x,x) \\ \text{believe}(x): \left[ \begin{array}{l} u \ v \ \left[ \begin{array}{l} \text{center}(u) \ \text{see\_in\_mirror}(u,v) \ \text{beautiful}(v) \end{array} \right] \end{array} \right] \end{array} \right] \end{array} \right] \end{array}$$

Now, if it had been ‘Miina’ instead of ‘Karen’ in (5) we would have resolved R to =, giving rise to the preferred *de se* interpretation represented (minus

<sup>3</sup>Because worlds do not usually have a unique center, I would add a second dimension of context dependence for the interpretation of indexicals like ‘center’, and consequently a diagonalization operator for the semantics of ‘believe’, if it weren’t for lack of space.

context) in (4d). As promised, the embedded ‘she’ is interpreted wide-scope and as a third person (contrast (Schlenker 2003; Von Stechow 2002) who get rid of the 3rd person feature).

Now let’s see what happens if we apply our analysis to the more challenging (4c): a third person report with ‘shifted’ first person and only a *de se* reading. Maintaining uniformity, we get (7a) for (4c) and resolve that to (7b) by binding PRO to the closest possible first person (‘center’):

$$(7) \quad \begin{array}{l} \text{a.} \quad \left[ \begin{array}{l} y \mid \text{miina}(y), R(y,w) \doteq? \\ \text{believe}(y): \left[ \begin{array}{l} u \ v \mid \text{center}(u) \ R(u,v) \ \text{beautiful}(v) \\ \partial[w \mid \text{PRO.1.sg.}(w)] \end{array} \right] \end{array} \right] \\ \text{b.} \quad \left[ \begin{array}{l} y \mid \text{miina}(y), R(y,u) \doteq? \\ \text{believe}(y): \left[ \begin{array}{l} u \ v \mid \text{center}(u) \ R(u,v) \ \text{beautiful}(v) \end{array} \right] \end{array} \right] \end{array}$$

It may seem strange that  $u$  occurs free in (7b), but note that this is an occurrence in a *formal* condition so all it does is narrow down the set of candidates for formally equating the lambda term ‘ $R(y,u)$ ’ with. Taking the smallest suitable and non-trivial part of (7b) results in:

$$(8) \quad \begin{array}{l} \text{a.} \quad \left[ \begin{array}{l} y \mid \text{miina}(y), R(y,u) \doteq \text{believe}(y): \left[ \begin{array}{l} \mid \text{center}(u) \end{array} \right] \\ \text{believe}(z): \left[ \begin{array}{l} u \ v \mid \text{center}(u) \ R(u,v) \ \text{beautiful}(v) \end{array} \right] \end{array} \right] \\ \text{b.} \quad R \mapsto \lambda s \lambda t. \text{believe}(s): \left[ \begin{array}{l} \mid \text{center}(t) \end{array} \right] \\ \text{c.} \quad \left[ \begin{array}{l} y \mid \text{miina}(y) \ \text{believe}(y): \left[ \begin{array}{l} u \ v \mid \text{center}(u) \\ \text{believe}(u): \left[ \begin{array}{l} \mid \text{center}(v) \end{array} \right] \\ \text{beautiful}(v) \end{array} \right] \end{array} \right] \end{array} \right] \end{array}$$

Now we’re stuck, since what we want is truth-conditionally different, viz. (4d). What’s missing is some kind of introspection principle: if you believe to believe  $\varphi$ , you believe  $\varphi$ . Such principles have been studied in doxastic modal logic, e.g. in the standard system for belief, **KD45**, we have both positive and negative introspection, corresponding to the frame properties of transitivity and Euclidicity. An analogon for our system of belief as property ascriptions would be:

$$(9) \quad \text{If } v \in \text{bel}(a, w) \text{ and } b \text{ is the center of } v, \text{ then } \text{bel}(a, w) = \text{bel}(b, v).$$

In other words, the person you believe yourself to be, has, in the world you believe to inhabit, the same beliefs as you. A simple computation of semantic values shows the the semantic equivalence of (8c) and (4d) under (9).

## References

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