Concept Generators in *De Re* and *De Se* Attitude Reports: Percus & Sauerland (2003)

1. Background: Are There Ever Purely *De Se* Readings?

(1) **The Importance of Percus & Sauerland (2003)**

a. An empirical argument that sentences like (i) are genuinely ambiguous between two readings: (strictly) *de se* reading, and *de re* reading

(i) John_1 believes [that he_1 will win]

b. A compositional semantics for propositional attitude sentences which:

(i) Implements key ideas of the Kaplan-Lewis analysis

(ii) Doesn't employ *ad hoc* (or theoretically illegitimate) movement operations (like '*res*'-movement)

(iii) Avoids having to posit a lexical ambiguity in the verb "believes" (or any other attitude verb)

(iv) Works within a standard type-driven semantics.

(2) **Key Question**

The sentence in (1a) above is true in either scenario (a) or (b) below. **Is that because the sentence is ambiguous, or it is because the sentence has one (weak) reading that is true in both scenarios?**

a. <u>'*De Se*' Belief Scenario:</u>
John is running for office, and has a high opinion of his chances. He often sincerely utters "I am going to win".

b. <u>'*De Re*' Belief Scenario:</u>
John is running for office, but has a low opinion of his chances. He often sincerely utters "I am going to lose."
One night, he drowns his sorrows at a local bar. While there, one of his own campaign speeches plays on the radio. However, he's so drunk, he can't recognize himself or the speech. Nevertheless, he's deeply impressed by what he hears, and sincerely utters "That guy is going to win."

(3) **The Univocal Proposal (Cresswell & von Stechow 1982)**

If sentence (1a) is assigned the Kaplan-Lewis *de re* truth-conditions below, it will be true in both scenarios (since '=' is always a suitable accessibility relation)

- There is a 'suitable' relation R such that:
  John bears R uniquely to **John** in w
  ∀<w',y> ∈ Dox-Alt(John,w) . [ιz.R(y,z,w')] will win in w'

a. <u>'*De Se*' Belief Scenario:</u> 'R' is witnessed by identity

b. <u>'*De Re*' Belief Scenario:</u>
'R' is witnessed by 'x heard y on the radio on such-and-such a date and time'

(4) **The Ambiguity Proposal (Percus & Sauerland 2003)**

- There is indeed a distinct reading of (1a) which is *only* true in scenario (2a).
  (The strictly *de se* reading)

- However, there is also a weaker reading of (1a) which is true in both scenarios (2a,b)
  (The *de re* reading)

<u>Note:</u> Certain later authors have found reasons for thinking that – at least in some languages – the reading which is true in *de re* scenarios like (2b) is *not* true in *de se* scenarios like (2a) (Anand 2006, Park 2014)

(5) **Precedent for an Ambiguity**

Control infinitivals like (a) below only allow for strictly *de se* readings.
- That is, (a) is only true in scenario (2a), never in scenario (2b).
- Again, though, the finite complement version (b) is true in both scenarios.

a. John expects [to win].
b. John expects [that he will win].

(6) **The Key Question, Again**

- Is sentence (5b) *ambiguous* between the reading that (5a) receives and another (weaker) reading?

- Or, does sentence (5b) only have a single, weak reading that covers both the scenarios in (2a,b)?

Clearly, in the absence of evidence for an ambiguity in (1a)/(5b), we should not posit one…
However, it seems that there is…

2. Evidence for Strictly *De Se* Readings of Attitude Reports with Finite Complements

(7) **Assumption 1: The *De Re* Reading of the VP in (1a)**

- Since sentence (1a) allows a reading that is true in scenario (2b), we assume that it at least allows the reading in (3).
- Therefore, we assume that the VP in that sentence (‘*believes that he will win*’) can receive the interpretation below:

[[believes that he will win]]^{w} =

[λ**x** : There is a ‘suitable’ relation R such that:
x bears R uniquely to **x** in w and
∀<w’,y> ∈ Dox-Alt(**x**,w) . [ιz.R(y,z,w’)] will win in w’]

(8) **Assumption 2: The Semantics of Adnominal *Only***

So-called ‘adnominal *only*’, illustrated in (a) below, has the semantics in (b). Therefore, sentence (a) receives the truth-conditions in (c).

a. <u>Sentence:</u> [Only Bill] smokes.

b. [[Only]]^{w} = [λx : λ$P_{<et>}$: P(x) = T and for all y, if y ≠ x, P(y) = F]

c. <u>Truth-Conditions of (8a):</u>
Bill smokes in w, and for all y, if y ≠ Bill, y does not smoke.
(‘*Bill is the only thing that smokes’*)

(9) **Assumption 3: Truth-Value Judgments**

In the scenario under (a), sentence (b) can be interpreted as *true*.

a. <u>Scenario:</u>
A bunch of candidates for office are getting drunk at a bar. John has a high opinion of his chances and sincerely utters “I am going to win.” Everyone else has a low opinion of their chances. However, Bill hears himself on the radio, and not recognizing himself, says “That guy is going to win.” Similarly, Sam hears himself on the radio, and not recognizing himself, says “That guy is going to win.” Finally, Peter hears John on the radio and says “That guy is going to win.”

b. <u>Sentence:</u> Only John believes that he will win.

(10) **The Argument for a Strictly *De Se* Reading**

- If sentence (1a) has only the reading that is true in scenario (2b), then the VP "*believes that he will win*" has only the denotation in (7).

- However, if the VP only ever has that denotation, then the semantics for adnominal *only* in (8) predict that sentence (9b) can only ever receive the truth-conditions in (a)

a. Predicted Truth-Conditions of (9b):

There is a 'suitable' relation R such that **John** bears R uniquely to **John** in w and
∀<w',y> ∈ Dox-Alt(**John**,w) . [ιz.R(y,z,w')] will win in w', *and*

For all y, if y ≠ **John**, **it is not the case that**
There is a 'suitable' relation R such that **y** bears R uniquely to **y** in w and
∀<w',s> ∈ Dox-Alt(**y**,w) . [ιz.R(s,z,w')] will win in w'

- However, the truth-conditions in (a) above *do not hold* in scenario (9a).
  - For Bill and Sam, the 'suitable' relation R would be something like 'x heard y on the radio on such-and-such a date and time'

- **Therefore, it cannot be that the VP "*believes that he will win*" can only ever receive the *de re* interpretation in (7)**

(11) **The Solution**

- Let us suppose that the VP "*believes that he will win*" also allows a strictly *de se* interpretation like (a) below:

a. $[[$ believes that he will win $]]^{w}$ =
[λ**x** : ∀<w',y> ∈ Dox-Alt(**x**,w) . y will win in w']

- We would therefore predict that (9b) would allow for the reading in (b) below:

b. Predicted Reading of (9b):
∀<w',y> ∈ Dox-Alt(**John**,w) . y will win in w', *and*
For all y, if y ≠ **John**, **it is not the case that**
∀<w',z> ∈ Dox-Alt(**y**,w) . z will win in w'

- These truth-conditions in (b) *would indeed hold* in scenario (9a).

- Therefore, we would correctly predict that (9b) can be read as true in scenario (9a)

(12) **First Objection**

- What if we just suppose that under the relevant reading of (9b), the pronoun *him* isn't bound by *John*, but is merely co-referent with it.

- Then the VP "*believes that he will win*" will have the denotation (a), and so sentence (9b) will have the truth-conditions in (b)

a. [[believes that he will win]]^{w} =

[λ**x** : There is a 'suitable' relation R such that:
x bears R uniquely to **John** in w and
∀<w',y> ∈ Dox-Alt(**x**,w) . [ιz.R(y,z,w')] will win in w']

b. <u>Predicted Truth-Conditions for (9b):</u>
There is a 'suitable' relation R such that **John** bears R uniquely to **John** in w and
∀<w',y> ∈ Dox-Alt(**John**,w) . [ιz.R(y,z,w')] will win in w', *and*

For all y, if y ≠ **John**, **it is not the case that**
There is a 'suitable' relation R such that **y** bears R uniquely to **John** in w and
∀<w',s> ∈ Dox-Alt(**y**,w) . [ιz.R(s,z,w')] will win in w'

- Note that there is indeed no such relation R for Bill and Sam, since they don't have any attitudes towards John at all (only towards themselves)

(13) **Immediate Answer**
But, the truth-conditions in (12b) *still* won't hold in scenario (9a), since there *is* such a suitable relation for *Peter* (who hears John on the radio and thinks "that guy will win").

(14) **Second Objection**

- This argument goes through only because, under the semantics in (7), the existential quantification over relations 'R' has to take narrow scope with respect to '*only John*'

- However, if there was some way of getting that quantification to scope *highest*, we'd end up getting the truth-conditions below, **which would hold in scenario (9a)** [just let 'R' be witnessed by identity]

a. <u>Wide-Scope Existential Truth-Conditions</u>
There is a 'suitable' relation R such that **John** bears R uniquely to **John** in w and
∀<w',y> ∈ Dox-Alt(**John**,w) . [ιz.R(y,z,w')] will win in w', *and*

For all y, if y ≠ **John**, **it is not the case that**
∀<w',s> ∈ Dox-Alt(**y**,w) . [ιz.R(s,z,w')] will win in w'

(15) **Percus & Sauerland's Answer**
That's true, but the onus is on someone to give a semantics where that existential quantification *can* scope high, above '*only John'*.

3. A Compositional Semantics for Attitude Reports

(16) **Key Question**
How does a VP like "*believes he will win*" end up denoting either of the functions below?

a. *De Re* Interpretation:
[λx : There is a 'suitable' relation R such that:
x bears R uniquely to John in w and
∀<w',y> ∈ Dox-Alt(x,w) . [ιz.R(y,z,w')] will win in w']

b. *De Se* Interpretation: [λx : ∀<w',y> ∈ Dox-Alt(x,w) . y will win in w']

Percus and Sauerland's (2003) answer comes in two parts: one for the de re interpretation in (16a), and another for the de se interpretation in (16b)…

3.1 The LF of the *De Re* Interpretation

The first step is to replace the notion of an 'acquaintance relation' R with that of an 'acquaintance-based concept' C.

(17) **Acquaintance Based y-Concept for x**
C is an acquaintance based y-concept for x (in world w) if

a. C is an individual concept (function from possible worlds to entities (type <se>))

b. There is a 'suitable' acquaintance relation R that x bears uniquely to y in w, and
∀<w',y> ∈ Dox-Alt(x,w) . [ιz.R(y,z,w')] = C(w')
'In all of x's doxastic alternatives <w',y>, C(w') is the thing that x bears R to'

Illustration:
In our original Double Vision scenario, the following is an acquaintance based Orcutt-concept for Ralph: [λw' : the man in the brown hat in w']

- By assumption, the suitable acquaintance relation is something like 'x saw y wearing a brown hat (under questionable circumstances, on such-and-such a date)'

- In all of Ralph's doxastic alternatives <w',y> the thing that y bears that relation to in w' is *the man in the brown hat in w'*

We can then alter the denotation in (16a) to the following, without impacting the overall analysis…

(18) **Revised *De Re* Interpretation for the VP**

[[believes that John will win]]^{w} =

[λx : There is an acquaintance based John-concept C for x in w such that
∀<w',y> ∈ Dox-Alt(x,w) . C(w') will win in w']

> Note: Given the definition in (17), if (18) is ever true of an entity x, then so will be (16a), and *vice versa*.

The next step is to replace the quantification over concepts in (18) with quantification over *concept generators…*

(19) **Acquaintance Based Concept Generator (for x in w)**

G is an acquaintance based concept generator for x (in world w) if

a. G is a function from entities to individual concepts (type <e<se>>)

b. For all y, G(y) is an acquaintance based y-concept for x in w

Note: Such a concept generator for Ralph (in our Double Vision story) could map the individual Orcutt to the concept [λw' : the man in the brown hat in w']

Note: Such a concept generator is basically just a 'counterpart function' (Handout 2), where the counterpart concept (CP(y)) is required to be an 'acquaintance based y-concept for x'

Now let us alter the denotation in (18) to the following:

(19) **Re-Revised *De Re* Interpretation for the VP**

[[believes that John will win]]^{w} =

[λx : There is an acquaintance based concept generator G for x in w such that:
∀<w',y> ∈ Dox-Alt(x,w) . G(John)(w') will win in w']

Note: Again, given the definition in (19), the predicate in (19) holds of an entity *iff* the predicate in (18) does.

We can now lay out the means for compositionally deriving the denotation in (19)…

(20) **Abstractor Over Possible Worlds**
Instead of using the rule IFA, we'll employ a special (unpronounced) sentential operator 'λw' to do the same thing!

$[[\lambda w \text{ XP}]]^{w} = [\lambda w' : [[XP]]^{w}]$

(21) **Variables and Lambdas Over Concept Generators**

a. We'll introduce special (unpronounced) pronouns denoting concept generators. As pronouns, they will bear indices, but can only be interpreted as concept generators.

$[[G_n]]^{w,g} = g(n)$ only if g(n) is a function of type <e<se>>

b. We'll introduce a special (unpronounced) sentential operator, which will be interpreted as a lambda operator binding concept-generator variables

$[[\lambda G_n \text{ XP}]]^{w,g} = [\lambda G_{<e<se>>} : [[XP]]^{w,g(n/G)}]$

(22) **The Syntactic Structure and Semantics of Clausal Complements**

The VP "*believes that John will win*" can have the following syntactic structure, made up of the ingredients in (20)-(21).

a. [believes [that [λG_1 [λw [[G_1 John] will win] …]

Given our semantics in (20)-(21), the subordinate clause in (22a) will have the denotation in (b).[1]

b. [λG : [λw' : G(John)(w') will win in w']]

Consequently, the subordinate clause denotes a function from concept generators to propositions.

- Which is akin to a function from *counterpart functions* to propositions…
- Which if we assume counterpart theory, can be motivated on independent (ontological) grounds…

[1] There's a slight fudge in my presentation here, whereby the subject ends up denoting 'G(John)(w')', rather than just 'G(John)'. As before, this is due to my slightly simplifying Percus & Sauerland's (2003) system, which also postulates unpronounced pronouns over possible worlds.

We now revise our semantics for '*believes*' in the following way…

(23) [[believes]]^w =

[$\lambda\Phi_{<<e<se>>,<st>>}$: λx :
There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) . Φ(G)(w') = T]

With (22)-(23) in place, we can now compositionally derive the VP-semantics in (19)

(24) **Semantic Derivation of (19)**

a. [[believes [that [λG_1 [λw [[G_1 John] will win] …]]]^w =

b. [[believes]]^w ([[that [λG_1 [λw [[G_1 John] will win]…]]]^w) =

c. [[believes]]^w ([λG : [λw' : G(John)(w') will win in w']]) =

d. [$\lambda\Phi_{<<e<se>>,<st>>}$: λx :
There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) . Φ(G)(w') = T]
([λG : [λw' : G(John)(w') will win in w']]) =

e. [λx : There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) .
[λG : [λw' : G(John)(w') will win in w']](G)(w') = T] =

f. [λx : There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) . G(John)(w') will win in w']

(25) **The Key Trick Here**

- Rather than quantify directly over 'acquaintance relations' (between the believer and the *res*)…
- We quantify over a functions that will map an entity y (*res*) to concepts that will only exist *if such an acquaintance relation holds between the believer and y*
- Consequently, we don't need the '*res*' to actually be an argument of the propositional attitude verb!
  - (All the information that would usually be 'packed in' to that argument position is actually packed into the definition of the function G…)

3.2 The LF of the *De Se* Interpretation

We can take the same basic ingredients in (17)-(23), and make some slight alternations to also yield an LF that will receive a strictly *de se* interpretation…

(26) **First Adjustment**

- In addition to the (silent) operators ‘λG_n’ and ‘λw’, the left periphery of the subordinate clause will also contain a ‘regular’ lambda over (entity) pronouns.

a. Revised Structure for Subordinate Clauses
[believes [that [λG_1 [λw [**2** [[G_1 John] will win] …]

- As shown above, this (entity) lambda can bind vacuously.
- Unlike what was stated in Handout 1, this operator can be freely inserted, and doesn't have to be generated by movement in the subordinate clause.
- Now subordinate clauses will denote functions from concept generators to *properties* (rather than to *propositions*)

b. Predicted Semantics for Subordinate Clause in (26a)
[λG : [λw’ : [λx : G(John)(w’) will win in w’]]]

(27) **Second Adjustment**
Since the object of ‘*believes*’ is now a function from concept generators to *properties*, we'll make a concomitant change in our lexical semantics for ‘*believes*’

$[[\text{believes}]]^w$ =

[$\lambda\Phi_{<<e<se>>,<s<et>>>}$: λx :
There is an acquaintance based concept generator G for x in w such that:
$\forall$<w’,y> ∈ Dox-Alt(x,w) . Φ(G)(w’)(y) = T]

(‘There is an acquaintance based concept generator G for x in w such that,
x self-ascribes the property you get from applying Φ to G…’)

(28) **Fact:** Because operator ‘2’/‘λx’ in (26) binds vacuously, the semantics in (27) predicts that the LF in (26a) will still get the denotation in (19)/(24)

(The reader is invited to prove this for themselves).

So why add this operator abstracting over entities???...

(29) **Deriving the *De Se* Reading of the VP "Believes He Will Win"**

- Suppose we now allow the operator 'λG_n' bind vacuously while the abstractor over entities binds a pronoun. Such an LF would be as in (a) below:

a. Structure for Purely *De Se* Readings:
[believes [that [λG_1 [λw [**2** [**he$_2$** will win] …]

- As shown below, our semantics in (26)-(27) predicts that this structure will denote a predicate ascribing a purely *de se* attitude.

b. Semantic Derivation for LF (29a)

(i) $[[$believes [that [λG_1 [λw [**2** [**he$_2$** will win]…] $]]^w$ =

(ii) $[[$believes$]]^w$($[[$ that [λG_1 [λw [**2** [**he$_2$** will win]…] $]]^w$) =

(iii) $[[$believes$]]^w$([λG : [$\lambda w'$: [λx : x will win in w']]]) =

(iv) [$\lambda \Phi_{<<e<se>>,<s<et>>>}$: λx :
There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) . Φ(G)(w')(y) = T]
([λG : [$\lambda w'$: [λx : x will win in w']]]) =

(v) [λx: There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) .
[λG : [$\lambda w'$: [λx : x will win in w']]](G)(w')(y) = T] =

(vi) [λx: There is an acquaintance based concept generator G for x in w such that:
$\forall$<w',y> $\in$ Dox-Alt(x,w) . y will win in w'] =

(vii) [λx: $\forall$<w',y> $\in$ Dox-Alt(x,w) . y will win in w']

(30) **The Key Trick Here**

If we allow our semantic system to tolerate (certain) instances of vacuous quantification, we can have a single lexical entry for "believes" which will yield both *de re* and (strictly) *de se* truth-conditions…

- We get *de re* truth-conditions when we vacuously bind over entities (i.e., the center), and we non-vacuously bind over concept-generators…

- We get (strictly) *de se* truth-conditions when we vacuously bind over concept generators, and we non-vacuously bind over entities (i.e., the center)…

Finally, if both 'λG_n' and the abstractor over entities bind vacuously, we get a de dicto reading!

(31) **Deriving a *De Dicto* Reading**

a. Structure for a *De Dicto* VP: [believes [that [λG_1 [λw [2 [it is raining] …]

b. Predicted Semantics: $[[(31a)]]^w$ =

(i) $[[\text{believes}]]^w$([λG : [λw' : [λx : it is raining in w']]]) =

(ii) [λx: There is an acquaintance based concept generator G for x in w such that:
$\forall \langle w', y \rangle \in$ Dox-Alt(x,w) .
[λG : [λw' : [λx : it is raining in w']]](G)(w')(y) = T] =

(iii) [λx: There is an acquaintance based concept generator G for x in w such that:
$\forall \langle w', y \rangle \in$ Dox-Alt(x,w) . it is raining in w'] =

(iv) [λx : $\forall \langle w', y \rangle \in$ Dox-Alt(x,w) . it is raining in w']

And, if both 'λG_n' and the abstractor over entities bind ***non****-vacuously, we get a reading that is 'de re' on one NP and 'de se' on another…*

(33) **No Vacuous Binding: Combined *De Re* and *De Se* Attitudes**

a. Possible Sentential Structure:
[Ralph [believes [that [$\boldsymbol{\lambda G_1}$ [λw [**2** [[$\mathbf{G_1}$ Orcutt] hates $\mathbf{him_2}$] …]

b. Predicted Semantics: $[[(33a)]]^w$ = T *iff*

There is an acquaintance based concept generator G for Ralph in w such that:
$\forall \langle w', y \rangle \in$ Dox-Alt(Ralph,w) . G(Orcutt)(w') hates y in w']

c. Scenario Validating Exactly These Truth-Conditions:
In our original 'Double Vision' scenario, Ralph goes on to form the (*de se*) belief that 'the man in the brown hat' (which he saw under questionable circumstance) hates him…

4. Some Applications and Puzzles Involving Sentences with More than One *Res*

The syntax-semantics sketched above easily extends to sentences containing more than one 'res', such as the following.

(34) **The Percus & Sauerland (2003) Treatment of Multiple *De Re***

a. Sentence: Ralph believes that Cicero denounced Cataline.

b. LF-Structure:
[Ralph [believes [that [λ$\mathbf{G_1}$ [λw [2 [[$\mathbf{G_1}$ Cicero] denounced [$\mathbf{G_1}$ Cataline] …]

c. Predicted Truth-Conditions
There is an acquaintance based concept generator G for Ralph in w such that:
∀<w',y> ∈ Dox-Alt(Ralph,w) . G(Cicero)(w') hates G(Cataline)(w') in w'

Important Feature: One-and-the-same concept generator G can map Cicero and Cataline to two different concepts.

G(Cicero) = [λw' : the guy whose picture is in Chapter 1 of *Elementary Latin* in w']

G(Cataline) = [λw' : the guy whose picture is in Chapter 2 of *Elementary Latin* in w']

However, since concept generators are functions, there is one important limit predicted regarding 'multiple de re' readings…

(35) **Prediction: One Entity, One Concept**

Suppose that (i) two co-referential expressions occur within an attitude complement, and (ii) the sentence is construed under a *de re* reading where the referent of those expressions is the '*res*'. **The attitude holder cannot be ascribing properties to the *res* under two different descriptions for the *res*.**

a. Sentence: Ralph believes Bill will vote for Bill.

b. LF Structure of *De Re* Reading:
[Ralph [believes [λ$\mathbf{G_1}$ [λw [2 [[$\mathbf{G_1}$ Bill] will vote for [$\mathbf{G_1}$ Bill] …]

c. Predicted Truth-Conditions:
There is an acquaintance based concept generator G for Ralph in w such that:
∀<w',y> ∈ Dox-Alt(Ralph,w) . G(Bill)(w') will vote for G(Bill)(w') in w'

d. Crucial Entailment: In all of Ralph's doxastic alternatives, there is someone voting for themselves (i.e., the 'counterpart' of Bill).

(36) **Uniqueness of the Prediction in (35)**

The prediction in (35) is not made by the Cresswell & von Stechow (1982) system.

a. LF Structure of (35a) Predicted by Cresswell & von Stechow (1982):

[Ralph [believes [that [[will vote for] [Bill] [Bill]]…]

b. Semantic Calculation: $[[(35a)]]^w$ = T *iff*

There are 'suitable' relations R_1 and R_2 such that:
Ralph bears R_1 uniquely to Bill in w,
Ralph bears R_2 uniquely to Bill in w,
$\forall$<w',y> $\in$ Dox-Alt(Ralph,w) .
$\iota z.R_1(y,z,w')$ will vote for $\iota z.R_2(y,z,w')$ in w'

Note: The truth-conditions in (36b) will not require that anyone is voting for themselves in any of Ralph's doxastic alternatives!

So… who is right?

(37) **A Scenario Possibly Challenging the Prediction in (35)** [2]

There's an election for state governor. Ralph is not a very engaged voter, though, and so he doesn't really recognize the candidates or anything about them. He doesn't even know who the mayor of his own city is.

However, the mayor of his city is actually one of the gubernatorial candidates. On the way to vote in the election, Ralph happens to bump into the mayor. Not recognizing him, he just casually asks, "Who are you voting for?" The mayor, whose name is Bill, slyly remarks "I'm going to vote for the mayor", and chuckles to himself.

Bill thus forms the belief that that the guy he just bumped into (*i.e.*, Bill) is going to vote for the major (*i.e.* Bill).

Question: Can sentence (35a) be understood as true in this scenario?

- If so, that's a problem for Percus & Sauerland (2003)
- If not, that's an advantage of Percus & Sauerland (2003)

[2] Charlow & Sharvit (2014) attribute similar such arguments to Anand (2006) and Percus (2010).

(38) **Penultimate Note**

Suppose that we think (35a) *can* be read as true in scenario (37). *Is there any way to 'rescue' the Percus & Sauerland (2003) analysis?*

Percus (2010), Charlow & Sharvit (2014):
Yes! All we have to do is allow [[believes]]^{w} to be 'type flexible' again (Cresswell & von Stechow 1982), so that it can in principle quantify over *an arbitrary number* of concept generators…

a. Sentence: Ralph believes Bill will vote for Bill.

b. LF Structure of *De Re* Reading:
[Ralph [believes [λ$\mathbf{G_1}$ [λ$\mathbf{G_2}$ [λw [2 [[$\mathbf{G_1}$ Bill] will vote for [$\mathbf{G_2}$ Bill] …]

c. Predicted Truth-Conditions:
There are acquaintance based concept generators G, G' for Ralph in w such that:
∀<w',y> ∈ Dox-Alt(Ralph,w) . G(Bill)(w') will vote for G'(Bill)(w') in w'

(see Charlow & Sharvit (2014) for details)

(39) **Final Note**

Charlow & Sharvit (2014) argue that the approach of Percus & Sauerland (2003) is the only analysis 'on the market' that can handle 'bound *de re*' pronouns.

- That is, other approaches to *de re* cannot predict the reading of (a) where it is true in scenario (b).

a. Sentence: John believes [every female student]$_1$ likes [her$_1$ mother]

b. Verifying Scenario:
John is looking at pairs of pictures of the female students. He doesn't know that they're students (or maybe even that they are female). Every pair depicts the same student twice, but John doesn't know that. He thinks that each pair is showing two different people.
For whatever reason (fill it in), he ends up for every pair pointing to some picture in the pair and sincerely asserting "that one likes the other one's mother."

(see Charlow & Sharvit (2014) for details)

- **But in order for even Percus & Sauerland (2003) to predict these cases, we need the 'type flexible' augmentation in (38b,c)…**