

**Strong Reflexivity and attitudes *de se*:**  
**Evidence from ECM**  
Keir Moulton

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***Abstract***

I propose an account for *de se* interpretations that rests on the phenomenon of inherent reflexivity, here formalized as a new semantic constraint Strong Reflexivity. Strong Reflexivity characterizes inherently reflexive predicates, as well as constructions that are obligatorily *de se*, by adding the constraint on relations so that only identical arguments can be in it. This contrasts with standard (and weaker) reflexivity which does not constrain the very meaning of a predicate in this way.

A contrast in *de se* interpretations in English ECM constructions leads to a syntactic distinction between structures that give rise to non-obligatory and obligatory *de se* interpretations. It is proposed that the latter result from “strong” or inherent reflexivity between an attitude holder and the object of a *de re* belief. Strong Reflexivity is represented by a *v* (or Voice) head, *!SELF*. In English, the syntactic presence of this head must be overtly marked, and only raising of a reflexive licenses *!SELF*, something that occurs in one class of ECM constructions. It will be shown how Strong Reflexivity is needed to characterize inherently reflexive predicates. Evidence from Swedish, where there is a morphological distinction between standard and Strong Reflexivity, corroborates the claim that inherent reflexivity and *de se* are related phenomenon.

**0. The puzzle**

*De se* interpretations are known to contrast controlled PRO with overt pronouns (Chierchia 1989). In (1) the embedded pronoun can be interpreted *de se*, true in a situation where Fred has a propositional attitude about himself knowing that it's about himself. This is paraphrased in (1a) with a first person pronoun. Or the pronoun can be interpreted purely *de re* in a situation where Fred unknowingly holds an attitude about Fred (1b). The familiar context involves Fred seeing himself on television without realizing that it is indeed himself that he is seeing, perhaps due to temporary amnesia.

- (1) Fred hopes that he will lose the election.  
 a. Fred says: "I hope that I lose the election" *de se*  
 b. Fred says: "I hope that guy loses the election" *de re*

This contrasts with the control structure in (2) where a purely *de re* interpretation is out and only the *de se* possible.

- (2) Fred hopes to lose the election.  
 a. Fred says: "I hope I lose the election." *de se*  
 b. #Fred says: "I hope that guy loses the election" *\*de re*

To this well-known contrast I submit the following contrast in ECM constructions.<sup>1</sup> One class of infinitival complements, (3a), allows its overt infinitival subject to be interpreted either *de re* or *de se*. Another class, (3b), patterns with control constructions in allowing only a *de se* interpretation.

- (3) a. Fred wants himself to be the best president. *de se/de re*  
 b. Fred believes himself to be the best president. *de se/\*de re*

<sup>1</sup> I construe ECM broadly for now as an infinitival complement with an overt subject. Chierchia (1989) notes (3b) and hints at a contrast with other ECM constructions. His intuitions in general differ from mine, but *any* discussion of *de se* is greatly indebted to his work.

Part of the task ahead is to verify these judgments, and to show that they generalize to a syntactically well-defined distinction among English ECM constructions. Verbs such as (3a) belong to the WANT or W-class and allow both interpretations. Verbs such as (3b) belong to the BELIEVE or B-class (Postal 1974) and require obligatory *de se*.

### 0.1 A sketch of the argument

Crucial to the interpretative differences in (3) are syntactic distinctions: we discover that in B-class infinitives the embedded subject enters a syntactic relation with the matrix predicate—for case reasons, in many accounts—while the embedded subject in W-class infinitives remains low (Lasnik and Saito 1991; Reinhart and Reuland 1993). Cashing in on this difference, the proposal here shows that a reflexive subject in B-class infinitives can license a (strongly) reflexive element in the matrix clause, but not in the W-class infinitives. To account for a contrast in interpretation sensitive to the syntax, I will maintain a reductionist view of *de se* attitudes whereby *de se* is a special case of *de re* belief with an Acquaintance Relation of identity between the attitude holder and a *res* argument (Lewis 1979). An Acquaintance Relation of identity is ensured via Strong Reflexivity operating on the attitude verb. *De se* is guaranteed in B-class ECM constructions because the syntactic movement of the infinitival reflexive subject licenses Strong Reflexivity, represented by  $v[!SELF]$  in the matrix vP projection. Since reflexives of this sort do not move in W-class constructions (Lasnik and Saito 1991, Reinhart and Reuland 1993),  $v[!SELF]$  is not licensed, and a *de se* interpretation is not obligatory. The *de re/de se* dimension in both W-class infinitives and in finite clauses is not represented at any syntactic or purely semantic level but is determined by how Acquaintance

Relations are contextually supplied (in accordance with Kaplan 1989; for a recent formulation of this view see Maier 2005a,b). B-class infinitives with reflexives will be argued to have the representation in (4); W-class and finite complements, the representation in (4b):

- (4) a. [DP [<sub>VP</sub> him-self<sub>1</sub> [<sub>V'</sub> !SELF [<sub>VP</sub> BELIEVE [<sub>TP</sub> t<sub>1</sub> to VP ]]]]]  
 b. [DP [<sub>VP</sub> WANT [<sub>CP</sub> himself to VP ]]]

As independent evidence and motivation, I show that !*SELF* characterizes inherently reflexive predicates, such (5a) in Swedish. These predicates express relations that can only hold between identical arguments, and require the form ‘sig’ rather than the complex reflexive *sig själv* as object.

(5a) *Inherently reflexive predicates*

Kalle vande sig/\*Petr/\*sig själv om (Lundin 2003)  
 Kalle turned REFL/Peter/himself around  
 ‘Kalle turned around’

A class of ECM propositional attitude constructions in Swedish exhibits these same binding requirements on the embedded subject (5b). Furthermore, (5b) can only be interpreted *de se* (K. Lundin, pc).

(5b) *Swedish inherently de se infinitives*

Han onskar sig/\*Petr/\*sig själv kunna springa 50 kilometer.  
 He wishes REFL/Peter/himself be-able-to run 50 kilometers.  
 ‘Hans wishes that he could run 50 kilometers’ (*de se*/\**de re*)

*!SELF* is present in both (5a,b) on the proposal to be advanced here because both are Strongly Reflexive—accounting for the similarity in form and meaning between inherent reflexives and *de se* reports.

The Strong Reflexivity account contrasts with other proposals for *de se* in control and overt pronoun cases. We will see that Chierchia’s (1989) property account will not capture the ECM facts. Moreover, evidence from ellipsis shows that *de se* is not rigidly encoded in the syntactic LF representation of the complement clause (cf. Percus and Sauerland 2003a,b). Rather, it will be shown that only in cases of obligatory *de se*—including B-class ECM—does *de se* arise through semantic and syntactic means.

### **1. *De Se* attitudes in finite and non-finite contexts**

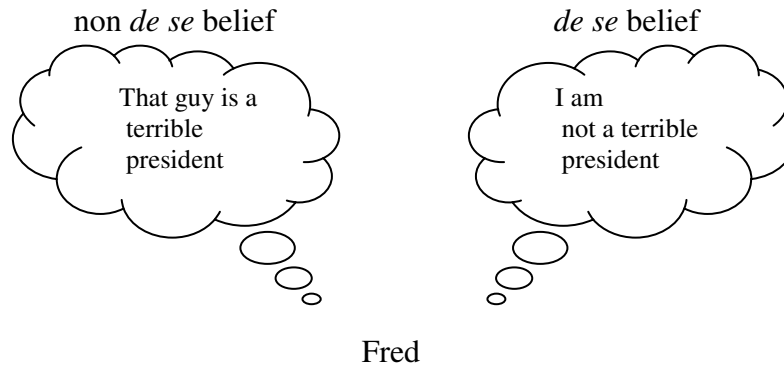
Before turning to *de se* reports in ECM, let me introduce the *de se* phenomenon in finite cases so we can evaluate the distinction in a truth-conditional way. Consider the scenario below:

#### **Scenario 1**

Fred is the president of a small nation. He is watching Fred (himself) deliver an address on television, but he is so drunk that he doesn’t recognize himself. He thinks that the guy he is seeing is a terrible president. (Nevertheless, Fred wouldn’t knowingly think such things about himself).

We can represent Fred’s belief states in the thought bubbles below. The thought on the right is a *de se* belief because it is one Fred knowingly self-ascribes. The thought bubble

on the left is a *de re*, or at least *non-de se* thought,<sup>2</sup> since it is a belief about Fred but not one Fred would agree is about him.



The crucial part now is how this plays out in the natural language of attitude reports. In this scenario, both (6a,b) can report Fred's beliefs, where the pronoun *he* is construed as *de re* (*non-de se*) in (6a) but *de se* in (6b).

- (6) a. Fred believed that he was a terrible president. *de re*  
 b. Fred believed that he was not a terrible president. *de se*

The purely *de re* report in (6a) is less acceptable than the *de se* report in (6b). It is the general intuition that we take the attitude holder's perspective (see e.g. Maier 2005a,b for a pragmatic analysis of this preference). But with enough contextual support, (6a) can be brought out, something we'll do below in verifying the ECM data of (3). Distinguishing between beliefs *de se* and beliefs *de re*, though, will allow (6a) and (6b) to be true in this

<sup>2</sup> I will use *de re* from now on to refer to *non-de se* reports. But since I will adopt a reductionist view of *de se*, it is actually the case that *de se* reports are *de re* as well. What I mean by *de se* is really *de re* plus something more (Strong Reflexivity as I will argue). What I mean by *de re* is then standard.

scenario without ascribing to Fred contradictory beliefs. (Although drunk, Fred still obeys the law of the excluded middle.)

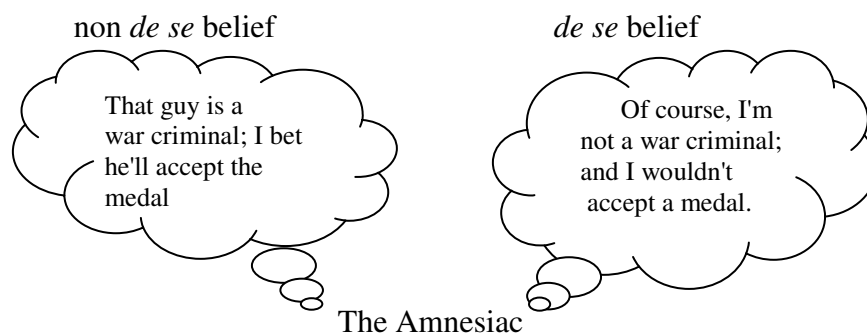
### 1.1 Obligatory *de se* and ECM

In finite clauses an anaphoric embedded pronoun can be read *de se* or *de re*. Now the claim I made in the introduction: a certain class of overt infinitival subjects (hereafter, ISs), when they are anaphoric to the attitude holder as in (3b), *must* be interpreted *de se*. Moreover, I want to show that this claim is interesting: It isn't in general a fact we can ascribe to reflexive ISs: it won't directly come from any analysis of reflexives or of ECM that we currently have.

Recall that a purely *de re* reading requires us to avoid taking the attitude holder's perspective. To do this, take a more objective perspective, one where we are reporting a situation as experimenters.

#### Scenario 2:

We are conducting an experiment on an amnesiac patient and his responses to film footage of himself. We showed The Amnesiac a film of himself receiving a medal for his bravery in the war. The Amnesiac doesn't remember getting a medal, nor does he recognize himself in the footage. Since his tour of duty ended, he has become an opponent to the war. He says that the guy in the film "is a war criminal" and he expects that the guy will accept the medal.



We can report our experimental findings as follows:

- (8) a. The amnesiac watched himself get a medal in the film footage.  
 b. The amnesiac expected himself to accept the medal...  
 c. #The amnesiac believed himself to be a war criminal.  
 Cf. The amnesiac believed that he was a war criminal.

While (8a,b) can report The Amnesiac's attitudes, (8c) cannot. The infinitival subject must be interpreted *de se*.

We need to be doubly sure of these intuitions for two reasons. The first is that binding conditions like Principle A and B are subject to variation due to perspective (i.e. logophoricity) so the reflexives could be confusing us.<sup>3</sup> Second, the *de re* reading is less salient even in the finite cases. This is because we naturally take the believer's perspective, even when the issue is not one of *de se/de re*. In order to bring out any potential *de re* interpretation, let's step back. Say The Amnesiac recovered and we told him all about his experience watching himself on TV. He could say (9):

(9) *The Amnesiac after recovery*

That's crazy. I watched myself on TV? And I wanted myself to refuse the medal?  
 It's crazy, isn't it, that #I actually believed myself to be a war criminal!

And then we can become even more distant from the scenario, in the following report, when we talk about The Amnesiac's reactions after he was cured:

(10) *The experimenters' final report*

We told The Amnesiac about the things he thought about himself during the experiment. He was totally baffled that he watched himself of TV and expected

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<sup>3</sup> There is a relation between *de se* and logophoricity, in that logophoric pronouns often get a *de se* interpretation where a pronominal counterpart would not (Chierchia 1989, Kratzer ms). But not all logophoric pronouns are obligatorily *de se* (Reinhart 1991), and so although logophoricity surely is a part of the picture, the fact that English reflexives can be 'logophoric' in some way does not ensure that they are *de se*: insert the shaving example....

himself to accept the medal. #The Amnesiac was especially shocked when we told him that he believed himself to be a war criminal.

The last sentence in each of these reports is false, even when we do not take the attitude holder's perspective. In fact, the B-class ECM contexts are as obligatorily *de se* as control contexts. For instance, none of the following can report The Amnesiac's attitudes:

(11) *Obligatory de se in Control*

- a. #The Amnesiac wanted to get the medal.
- b. #The Amnesiac expected to get the medal.
- c. #The Amnesiac tried to get the medal.

Furthermore, if we use a quantification strategy to bring out a *de re* reading, the B-class ECM examples are still infelicitous. Percus and Sauerland (2003) show that *only*, when associated with the attitude holder, highlights how the *de se/de re* distinction interacts with syntactic-semantic properties. For instance, let's say that none of the experimenters thought The Amnesiac, nor themselves, was a war criminal. Only The Amnesiac believes this of The Amnesiac, non-*de se*. (12) can report this situation, with the embedded pronoun interpreted *de re*:

(12) Only The Amnesiac thought that he was a war criminal.

(12) would be false if *he* is understood *de se*. In ECM contexts, the intuitions play out differently, preserving the contrasts noted in (3) and (8). (13a) is not true in this scenario. On the other hand, (13b) can be true in a scenario where no one but The Amnesiac wants The Amnesiac to refuse the medal.

- (13) a. \*Only The Amnesiac believed himself to be a war criminal.  
 b. Only The Amnesiac wanted himself to refuse the medal.

Since (13a) is false in this scenario—and only a *de re* reading would make (13a) true—I conclude that *de se* is obligatory with BELIEVE ECM but not WANT ECM. In the next section I will show that these cases generalize, and that there is a correlation between *de se* and the syntax of two types of ECM.

## 1.2 The syntax of B- and W-class infinitives

So far I have only demonstrated this effect with one verb and contrasted it with two others. The paradigm in (8) is important because it generalizes. It is also important because it shows us that the obligatory *de se* reading we find with (8c) cannot be attributed to reflexives, in general. That is, reflexives are not obligatorily interpreted *de se* as (8a,b) convincingly show. Furthermore, the effect cannot be attributed to ECM positions, broadly taken. (8a,b) involve overt non-finite subjects but allow *de re* and *de se*. And lastly, the effect cannot be attributed to ECM in intensional contexts, such as *want* and *believe*, since the two pattern differently. A difference can be detected syntactically, according to how the infinitival subject interacts with the matrix verb. First, (8a) is a direct perception context, and all verbs in that class allow a *de re* reading. This is what we expect from a veridical environment like direct perception:

(14) *Direct perception predicates: de re/de se*

The amnesiac  $\left\{ \begin{array}{l} \text{saw} \\ \text{watched} \\ \text{heard} \\ \text{witnessed} \end{array} \right\}$  himself receive a medal.

I do not wish to speculate on direct perception reports. It suffices to note that they allow a *de re* interpretation of the ECM subject, showing us reflexive ECM subjects are themselves not responsible for obligatory *de se*.

Turning to the contrast between (8b) and (8c) we see that the kind of verbs that fit into (8b) belong to a class of control/ECM predicates well-known since Postal (1974). In brief, W-class verbs are those verbs which have both a control and ECM alternate, involve a quasi-future tense interpretation of their embedded infinitive (Stowell 1982), ban passive raising, and allow an overt complementizer *for*. The verbs tend to be desiderative in meaning and their complements often called *irrealis* (see Portner 1992 for a formal treatment of *for*-complements; see Bošković 1997, Martin 2001 for syntactic analyses). Some sample members of this class, taken from Pesetsky (1992), are shown below. Given the right context, each predicate allows *de re*.

(15) *W-class predicates: de re/de se*

The amnesiac		himself to refuse the medal.
		...refusing...

The *de re* judgments for W-class ECM stand out when they are juxtaposed with the control version, which we know are obligatorily *de se*:

- (16) a. The amnesiac wanted to get the medal. *de se*  
 b. The amnesiac wanted (very much for) himself to get the medal. *de re*

- |      |  |              |
|------|--|--------------|
| (17) | a. The amnesiac expected to get the medal.                           | <i>de se</i> |
|      | b. The amnesiac expected (very much for) himself to get the medal.   | <i>de re</i> |
| (18) | a. The amnesiac would hate to get the medal.                         | <i>de se</i> |
|      | b. The amnesiac would hate (very much for) himself to get the medal. | <i>de re</i> |
| (19) | a. The amnesiac preferred to get the medal.                          | <i>de se</i> |
|      | b. The amnesiac preferred (very much for) himself to get the medal.  | <i>de re</i> |

I have added in *very much for* in some of the (b) examples. This is because W-class ECM allow the complementizer *for* and other adverbial material to intervene between the matrix predicate and the IS. Of course, the W-class ECM versions also admit a *de se* reading. In fact, the precise pragmatic distribution of W+control versus W+ECM is murky. But they do distribute along the *de re/de se* parameter.

(8c) represents Postal's B-class verbs. B-class verbs have ECM and finite clause alternates, but no control versions (in English at least). They allow raising to subject, again with examples drawn from Pesetsky (1992).<sup>4</sup>

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<sup>4</sup> As is usual in classifying predicates, there are always gray areas. For instance, the verb *suspect* has an ECM form, although I find its ECM fine but the raising version odd:

- (i) The police suspected the couple to be criminals.
- (ii) ?The couple was suspected to have fled.

Concomitant with this observation is the fact that to the extent that raising is degraded, it seems to admit a *de re* reading, consistent if it is classified as a (W-class) raising verb:

- (iii) Fred suspected himself to be a war criminal. ?*de re/de se*

Nevertheless, the temporal properties of the complement are characteristic of B-class predicates. In general, I'll keep to the core B- and W- class verbs. *Suspect* may just not be compatible as a self-oriented attitude: self-suspicions might be odd in general.

(20) *B-class predicates: \* de re/de se*

The amnesiac	{ believed figured found considered discovered fancied felt held imagined judged knew reckoned supposed understood saw (epist)         }	himself to be a criminal
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Space precludes setting up a scenario in which each of these predicates can be used to report an attitude natural for The Amnesiac, but in each case *de se* is obligatory. (21a-f) cannot report The Amnesiac's beliefs.

- |      |  |  |
|------|--|--|
| (21) | a. #The Amnesiac considered himself to be a war criminal.<br>b. #The Amnesiac found himself to be a war criminal.<br>c. #The Amnesiac felt himself to be a war criminal.<br>d. #The Amnesiac judged himself to be a war criminal.<br>e. #The Amnesiac saw himself to be/being a war criminal.<br>f. #The Amnesiac reckoned himself to be a war criminal. | <i>de se/*de re</i><br><i>de se/*de re</i><br><i>de se/*de re</i><br><i>de se/*de re</i><br><i>de se/*de re</i><br><i>de se/*de re</i> |
|------|--|--|

I find the effect particularly strong with ECM *know*, which passes all diagnostic for the B-class. In our scenario, imagine The Amnesiac *knows* that the guy he is seeing on TV is a war veteran. Nevertheless, (22) cannot report The Amnesiacs beliefs:

- |      |  |                     |
|------|--|---------------------|
| (22) | The amnesiac knew himself to be a war veteran. | <i>de se/*de re</i> |
|------|--|---------------------|

Unlike the W-class predicates, there are no control versions of B-class verbs to contrast with. But Italian has control complements for B-class verbs. Just as we expect, they are obligatorily *de se*:

- (23) Gianni credo PRO di essere bello *de se/\*de re*  
 Gianni believes to be beautiful.  
 Gianni believes himself to be beautiful

I repeat the syntactic diagnostics that distinguish the B- and W-class verbs below in (24) with corresponding examples in (25/26). I've mentioned properties (24a-c). (24d) is the important one:

- |   |                              |
|---|------------------------------|
| (24) <b>B-Class</b>                             | <b>W-class</b>               |
| a. simultaneity requirement on infinitival time | future time allowed          |
| b. -PRO   | +PRO                         |
| c. passive raising                              | no passive-raising           |
| d. subject-to-object raising                    | no subject-to-object raising |

- (25) *B-class*
- a. \*Fred believes the judge to be an activist tomorrow.
  - b. \*Fred believed to PRO be a good president.
  - c. Fred was believed to be a good president.
  - d. Fred [<sub>Agro</sub> himself<sub>j</sub> [<sub>VP</sub> believed [<sub>IP</sub> t<sub>j</sub> to be a good president]]].

- (26) *W-class*
- a. Fred wanted the judge to be an activist tomorrow.
  - b. Fred wanted to be a good president.
  - c. \*Fred was wanted to be a good president.
  - d. Fred wanted [<sub>CP</sub> (for) himself to be a good president.]

Many of these differences have been attributed to a tense distinction, either a feature presence (Stowell 1982) or a tense operator (Abusch 2003), or to a mood-distinction in the complementizer domain (Bresnan 1972; Portner 1992). The subject-to-object raising

parameter (24d) finds support in Postal (1974) and Lasnik and Saito (1991). Further, in work stemming from Chomsky and Lasnik (1993), it is claimed that the tense distinction leads to a case distinction, a recent formulation of which can be found in Martin (2001). The T-node of B-class infinitives is [-tense; -finite]; as such it cannot license case on either PRO or an overt subject, in which case that DP moves to the higher clause for case checking, shown as movement to an Agreement projection AgrO (Lasnik and Saito 1991). As a consequence, the ECM subject can undergo passive raising (25c). In contrast, W-class complements' T-node is [+tense; -finite] (Stowell 1982), explaining (in part, at least) the future-oriented time of the complement. Tense that is [+tense, -finite] can check a particular kind of case on PRO (null case; Chomsky and Lasnik 1993). Moreover, in the ECM cases, the W-class verbs allow a CP complement headed by either an overt or covert *for*, which is involved in case-checking the infinitival subject (Pesetsky 1992, Bošković 1997). ECM in B-class verbs arises through a case relation between the IS and the matrix verb (often captured by raising the ECM subject, hence a Raising-to-Object (R-to-O) analysis). In W-class verbs, the IS does not enter any relation with the matrix verb.

There is evidence that B-class ECM involves movement of the IS to a matrix position. Lasnik and Saito (1991) argue that in B-class verbs the ECM subject must move into the matrix clause in order to account for binding effects. In (27a), the IS binds a reciprocal in the adjunct clause. The adjunct clause is attached to the matrix clause itself, and if the IS remained in the lower clause it would induce a binding violation. It doesn't, in the case of *believe*, but it does in the case of *want*, suggesting the former ECM subject has moved but the latter has not:

(27) *Reflexives are bound by B-class subjects, not W-class*<sup>5</sup>

- a. I believed [those men<sub>i</sub>] to be unreliable because of each other's<sub>i</sub> statements.
- b. \*I wanted [those men<sub>i</sub> to be fired] because of each other's<sub>i</sub> statements.

NPI licensing shows the same thing, when the NPI is an adjunct position and the licenser is in the matrix clause.

(28) *NPIs are licensed by B-class subjects, not W-class*

- c. I believed [none of the applicants] to be qualified after reading any of the reports.
- d. \*I wanted [none of the applicants to be hired] after reading any of the reports.

These facts suggest that the IS in B-class verbs *can* be interpreted high (i.e. at the head of the A-chain). Adding to the case-theoretic motivation noted above, the Lasnik and Saito facts call for movement of the IS to a matrix position in the B-class infinitives.

Postal (1974) offers other evidence that the ECM subject in B-class verbs (29b) must be interpreted high, outside the scope of the attitude verb in fact, in contrast to the subject of the finite complement (29a):

(29) *Postal Scope facts* (Postal 1974, p222)

- a. The FBI proved that few students were spies.
- b. The FBI proved few students to be spies.      *\*attitude verb > QP*

The *attitude verb > QP* scope means that the FBI proved there were few spy students, while the inverse reading is that the FBI proved of few students that those students were spies. The ECM version only allows the latter interpretation. (30) holds for the relevant interpretations.

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<sup>5</sup> Lasnik and Saito actually report their (a) judgments as ? and their (b) judgments as ??\*. I think the

- (30) a. Melvin showed that none of the formulas were theorems.  
 b. Melvin showed none of the formulas to be theorems.     \**attitude verb* > *QP*

In contrast, the ECM subject in *W*-class verbs can scope in or out of the attitude verb.

(31a) can have also an interpretation in which the FBI is good-hearted and wants the arresting of students to be minimal. Similar remarks hold for (31b).

- (31) a. The FBI wanted few students to be arrested.  
 b. Melvin wanted none of the formulas to be theorems.

In sum, the Lasnik and Saito (1991) binding evidence, and Postal's scope evidence<sup>6</sup> suggest that ECM subjects in the *B*-class cases are interpreted as though they were outside of the embedded clause after the application of (case-driven) *A*-movement.

### 1.3 Interim summary

It is clear that ISs in *B*-class infinitives bear a relation to the matrix clause that *W*-class ISs do not. Now the evidence in 1.1 was that any verb that can be diagnosed as a *B*-class verb will show obligatory *de se* effects on the ECM subject. While we have seen several ways to distinguish *B*- and *W*- class infinitives (tense, case, complementizers), the major difference is the way in which the infinitival subject interacts with the matrix predicate.<sup>7</sup> Explaining obligatory *de se* in *B*-class infinitives must be due to the syntactic role that the infinitival subject plays with respect to the matrix predicate. In the next

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contrast is strong enough to warrant categorical judgments.

<sup>6</sup> These judgments have been called into question by Larson et al (1997) and Lasnik (1999), who argue that a low reading is possible for the ECM subject. No one contests that there is some difference, though, between *W*- and *B*-class infinitives.

<sup>7</sup> *W*-class infinitives still allow a reflexive anaphor as an IS, suggesting that these too bear a syntactic role in the matrix clause. See Appendix A for discussion that casts doubt on this suggestion.

section I will show how the *de se/de re* distinction has been characterized semantically. Then we'll evaluate those approaches against the ECM evidence. A property complement approach to *de se* (Chierchia 1989) will not account for the ECM/raising-*de se* correlation. That will lead us to revise another approach—a reductionist *de re* version of *de se*—with the modification of Strong Reflexivity that allows for strengthening *de re* to *de se*.

## 2. *De se* in philosophy, semantics, and syntax

An important proposal for *de se* in finite and non-finite clauses is Chierchia (1989), which can be considered a less radical interpretation of Lewis (1979). For Chierchia, *de se* involves self-ascription of properties, where the attitude verb's complement supplies the property linguistically. Self-ascription is a primitive for Chierchia, but we can demonstrate his account in the following way. We start out with the notion of doxastic alternatives, which will take us from an individual-world pair,  $\langle x, w \rangle$ , the attitude holder and the evaluation world, to another individual-world pair  $\langle x', w' \rangle$ , a 'centered world', where  $w'$  is a world compatible with  $x$ 's beliefs in  $w$  ( $x$ 's doxastic alternatives), and  $x'$  is the person  $x$  identifies as himself in  $w'$ . Once we make this move, we don't have to worry too much about characterizing *de se*: we already have a hold of the person the attitude holder (knowingly) identifies as himself in his doxastic alternatives: the attitude holder just needs to predicate certain things of this counterpart. A denotation and interpretation for *de se* belief is given in (32a), which takes a Property level argument  $P$  and an attitude holder  $x$ , and predicates that  $P$  of  $x$ 's counterpart in her doxastic alternatives. (Subscripts

indicate a variable's type, *e* for entities, *s* for worlds; I will give informal interpretations in prose below formulae, freely using variables as though they were bound).

(32) *de se* belief:

a.  $\llbracket \text{believe}_{se} \rrbracket = \lambda P_{\langle e, \langle s, t \rangle \rangle} . \lambda ]x_e . \lambda w_s . \forall \langle x', w' \rangle \in \text{Dox}(\langle x, w \rangle) : P(x')(w')$

b. *less formally*, given any pair  $\langle x', w' \rangle$

where  $w'$  is a world compatible with  $x$ 's beliefs in  $w$ , and

where  $x'$  is the individual who  $x$  identifies as himself in  $w'$ , then

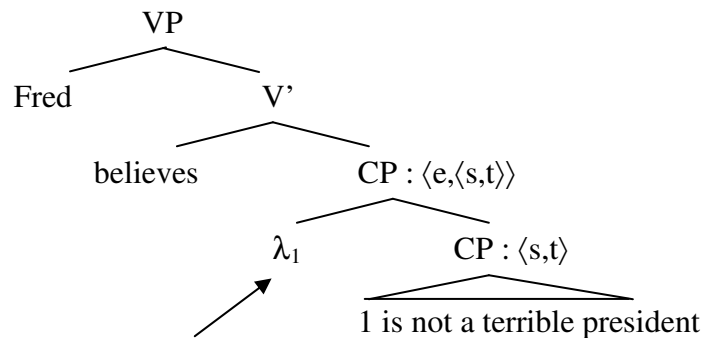
$P(x')(w')$

But just how do we get the property  $P$ ? And the right property? It is Chierchia's (1989) claim that *de se* results when we derive just such a property from the embedded clause in the object language. We can insert a lambda-binder at the top of the embedded clause that will abstract over the pronoun creating a property. Alternatively, Percus and Sauerland (2003a,b) suggest that each pronoun has an alternative function, *he\**, that moves and abstracts over the clause much as a relative pronoun does. In either case we get the LF for (33), Fred's *de se* belief:

(33) a. Fred believes that he is not a terrible president.

*De se* belief

b.



[(33)] is true iff  
 $\forall \langle x', w' \rangle \in \text{Dox}(\langle \text{Fred}, w_0 \rangle): [\neg \text{be-a-terrible-president}](x')(w')$

*informally,*

'In all of Fred's doxastic alternatives, the person he identifies as himself is not a terrible president'

What about Fred's *de re* belief, the one he holds while drunk, about himself without self-ascribing it? A *de re* belief about oneself is a state that is bound to require some special context. In this case, Fred doesn't ascribe a property P to the person he identifies as himself in his doxastic alternatives; rather, he ascribes P to the person he is seeing on TV. "See on TV" is one way that Fred is acquainted with himself, Fred, in this scenario.

An Acquaintance Relation is a way that an attitude holder is perceptually or causally related to the particular person, entity, or situation that he has a *de re* belief about—i.e. the *res*. We can come to have beliefs about a *res* by being acquainted with that *res*, but we don't need to be acquainted with it in the way that the attitude reporter is. Nor does an attitude holder need to be acquainted with the same *res* in one way. For instance, Quine (1956) shows us that depending on the Acquaintance Relation, one can hold contradictory attitudes about a *res* as long as one is acquainted with the *res* in more than one way. The attitude holder can be acquainted with a *res* in many ways: by perceiving it, knowing its name, reading about it. In the scenarios relevant to the *de se/de re* contrast, we have a what we might think of as an out-of-body relation of acquaintance, cases in which the *res* is the attitude holder herself, although her acquaintance with *herself* is mired by not recognizing herself. Rather, she is acquainted with herself through other means. Taking Fred's scenario, we see that he has beliefs about a *res*, Fred, and he is acquainted with that *res* by seeing that *res* on TV. Fred would tell us he has a belief

about the guy on TV, not about himself. This is not to say that Fred doesn't have *de se* beliefs. He does, as we saw above. But these are different than his *de re* beliefs about the person he's seeing on TV (who, of course, is himself!). To have a *de re* belief is to ascribe a property to a *res* under a particular description provided by the mode of acquaintance. (34a) is a type-specification for *de re* belief that incorporates Acquaintance Relations. An informal interpretation is given in (34b) (again, assume the appropriate binding of the variables in sub-conditions in the informal interpretations of lexical items).<sup>8</sup>

(34) *de re* belief

$$\text{a. } [\mathbf{believe}_{re}] = \lambda P. \lambda y. \lambda x. \lambda w. \exists R. [\text{Acquaint}(R) \wedge R(x)(y)(w) \wedge \forall \langle x', w' \rangle \in \text{Dox}(\langle x, w \rangle): P(\iota z. R(x')(z)(w'))(w')]$$

b. given any pair  $\langle x', w' \rangle$ , (34a) is true iff

- i. **there is an Acquaintance Relation R s.t. x bears R uniquely to y in w**
- ii. where  $w'$  is a world compatible with  $x'$ 's beliefs in  $w$
- iii. where  $x'$  is the individual who  $x$  identifies as himself in  $w'$
- iv. the unique individual  $z$  that  $x'$  bears R to in  $w'$  has the property P

The kind of object that the attitude verb must select in this case will be a structured proposition: a *res* (the 'y' argument) and a Property to ascribe to that *res* ('P' argument).

Take the *de re* belief above, where  $he_1$  is interpreted relative to an assignment function  $g$  that includes the mapping [ $1 \rightarrow \text{Fred}$ ].

(35)  $[\mathbf{Fred\ believed\ that\ } he_1 \mathbf{\ was\ a\ terrible\ president}]^g$

$$= [\text{believe}](\text{Fred})(\lambda x \lambda w. \text{terrible-president}(x)(w))(\text{Fred})(w_0)$$

<sup>8</sup> Lewis (1979) argues that what really happens in the *de re* cases is self-ascription of the property of bearing an Acquaintance Relation R to the *res*, and further ascribing a property P to the *res*. So *de re* belief is also self-ascription of properties—the property of bearing an Acquaintance Relation. Abstract over the AcquaintR and add this level of complexity if you wish; it won't change any of the linguistic arguments I make. See e.g. Heim (1998) and Percus and Sauerland (2003a,b) for this kind of abstraction in the object a language. I do not believe this is necessary, or perhaps desirable.

*by interpretation of de re belief*

$$= \exists R. [\text{acquaint}(R) \wedge R(\text{Fred})(\text{Fred})(w_0) \wedge \forall \langle x', w' \rangle \in \text{Dox}(\langle \text{Fred}, w_0 \rangle): \\ [\lambda x. \lambda w. \text{terrible-president}](\iota z. R(x')(z)(w'))(w')]$$

In the scenario above R is the ‘Seeing-on-TV’ relation, and R is contextually determined. Informally, what (35) says is that there is a relation R (supplied by the context), such that Fred bears R uniquely to Fred in the evaluation world, and in all of Fred’s doxastic alternatives  $w'$  in the evaluation world  $w_0$ , the unique individual  $z$  that Fred bears R to in  $w'$  is a terrible president. Even less formally: Fred thinks the guy he’s seeing on TV is a terrible president.

In Chierchia’s analysis *believe<sub>se</sub>* and *believe<sub>re</sub>* take different types of complements: the former takes properties while the latter takes (structured) propositions. Generalizing one to the other will take us too far afield (see fn 7). And getting at the composition of the propositional complement of *de re* reports (where the proposition is a Property–*res* pair) is not clear. Chierchia supports a distinction by arguing that control structures involve property-level complements, for reasons independent of *de se*, and that as a consequence *believe<sub>se</sub>* is required in these cases. Finite clause complements are ambiguous between a proposition-level complement  $\langle s, t \rangle$  and a property-level complement  $\langle e, \langle s, t \rangle \rangle$ . The relevant examples are given below with a simplified logical form (Chierchia 1989):

(36) a. Fred believes [that he is a terrible president] *de re attitude*

Fred  $\lambda x$  [believes (x, x is a terrible president)]

b. Fred believes [that he is not a terrible president] *de se attitude*

Fred [believes ( $\lambda x$ .  $x$  is not a terrible president)]

c. Fred hopes [PRO to win the election] *de se attitude: control*

Fred [hopes ( $\lambda x$ .  $x$  to win the election)]

The attitude verbs in (b) and (c) are those self-ascriptive ones that take properties as complements. Chierchia's claim is that in order to account for the obligatory-ness of *de se* attitudes in control we need to represent *de se* and *de re* reports differently.

Chierchia's analysis contrasts with the view that *de se* and *de re* are not distinguished at any linguistic level. A *de se* report is a *de re* attitude toward the self with an Acquaintance Relation of identity. Lewis (1979) puts it best:

Self-ascription of properties is ascription of properties to oneself under the relation of identity. Certainly identity is a relation of acquaintance par excellence. So belief *de se* falls under belief *de re*. (p.543)

So an attitude holder can have beliefs about himself under the guise of "the guy I am watching", as in Fred's case, a *de re* belief. But Fred could also have a belief about himself, but under the guise of identity: "the guy I am identical to." That's a *de se* belief. On this view, how the Acquaintance Relation is resolved in context determines the difference between *de re* and *de se*. In this way *de se* becomes a special, rather bare-bones, case of *de re*. All the semantics tells us is that there must be an Acquaintance Relation to make an attitude report true, but it doesn't tell us which kind (Kaplan 1989).

The two opposing views, then, differ on whether *de se* has a distinct linguistic representation from *de re*. Chierchia's claim is that it does. For him, *de se* reports involve

self-ascription of properties. And moreover, the property level complement is represented at a syntactico-semantic (or LF) level. In contrast, the reductionist view leaves the distinction out of the syntax and semantic representations. In the rest of this paper, I show that the contrast in English ECM constructions leads to an intermediate view. Only in the cases of obligatory *de se* do we have distinct LF representations for *de se* attitudes. Moreover, the distinct representations do not (simply) differ as to whether the complement is a property or a proposition. Rather, as the ECM constructions will show, the contrast is how the Acquaintance Relation in *de re* reports is linguistically constrained—that is, obligatory *de se* is just *de re* with identity as the Acquaintance Relation, guaranteed through syntactico-semantic means. These means will constrain a reflexive relation that an attitude holder has to himself—so much so that it requires identity.

## 2.1 The failure of Property account with ECM

Before turning to the proposed analysis, it is necessary to work through the predictions of the property approach to *de se*, since this has been the dominant view since Chierchia (1989). My goal is to build on Chierchia (1989). Recall that the Chierchia-style approach captured *de se* attitudes by treating the complement of an attitude verb as a property, and defining the predicate as an inherently self-ascribing predicate. It had the advantage for finite clauses that abstraction applied freely to give a *de se* attitude, and obligatorily in control under the idea that control complements are always properties (PRO is an abstractor: Chierchia (1984, 1985, 1989); Heim and Kratzer (1998)). Now, in B-class ECM, we want *de se* obligatorily as well. Moreover, we have seen that the

syntactic distinctions between W- and B-class infinitives (subject-to-object raising) ought to drive the interpretative difference. One way we might achieve that is to connecting raising with the kind of pronoun movement that Percus and Sauerland (2003) suggested for *de se* readings.

The problem is that the subject-to-object raising discussed above in §1.2 is A-movement. While A-movement creates a Property abstract, as shown below, the DP that is moved must still be interpreted (either in its surface or base position). The property abstraction needed for *de se* is A-bar movement. So while Percus and Sauerland's *he\** moved, it got out of the way quickly, meaning it was semantically vacuous after movement; all it did was create the Property. We cannot do that with ECM movement construed as A-movement:

(37) *A-movement*

**SS:** Fred [believed<sub>j</sub> [<sub>Agro</sub> himself<sub>i</sub> [<sub>VP</sub> t<sub>j</sub> [<sub>TP</sub> t<sub>i</sub> to be a criminal]]]]  
**LF:** Fred [<sub>Agro</sub> himself  $\lambda_1$  [<sub>VP</sub> believed [<sub>TP</sub> 1 to be a criminal]]]

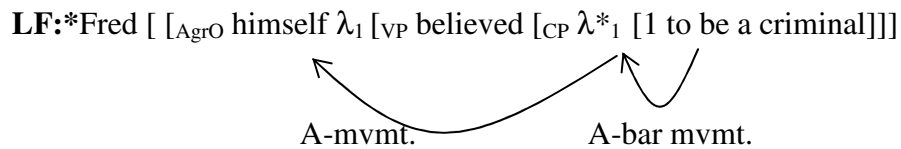
(38) *he\* movement*

Fred [believed [<sub>CP</sub> that he<sub>1\*</sub> was a war criminal]]  
**LF:** Fred believed [ $\lambda_1$  1 was a war criminal]]

We get a property in the LF of (37), just what Chierchia-style *de se* needs. But there are two problems. One is that the property abstract is above where we interpret the verb's complement. But we also have the lexical item *himself*. We need to interpret it: in fact, we saw in the binding cases we want to interpret it in a high position. One might treat *himself* in (37) just Percus and Sauerland's *he\**, but then we would have to explain why it takes the form of a reflexive, and why the reflexive must have this interpretation just in

the B-class infinitives. Recall that the generalization to explain is why infinitival reflexive subjects that undergo raising to the matrix clause must be interpreted *de se* while those that do not needn't be. If *himself* in B-class infinitives *must* abstract, why not in W-class infinitives? We need to tie the distinction to the kind of movement involved in B-class infinitives. And we just cannot make that movement do the trick. Since the infinitival subject in B-class infinitives must otherwise raise to the matrix clause, we can't possibly allow it to also leave a  $\lambda$ -abstractor at the top of the embedded clause. That representation (39) would lead to an improper movement violation—going from an A-bar to an A-position. In this scenario I label the abstracting movement with the binder  $\lambda^*_1$ , and the A-movement with  $\lambda_1$ .

(39) A-movement plus *himself*\* abstraction: improper movement



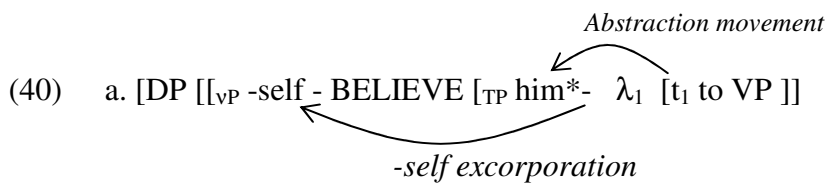
The same would result if we allow optional insertion of a lambda to bind the trace; this would break the movement chain created by raising, and the top-most  $\lambda$  would bind vacuously and the composition would crash since the raised subject would not land back in an argument position after lambda-reduction. It is a minimal and necessary requirement of standard A-movement to leave a bound trace.

One last attempt to rescue the property account for ECM needs to be addressed. This approach fails to work without modification to our notions of reflexivity, and once that modification is put in place we essentially derive the syntax required by the analysis

to be proposed in this paper. I have taken the view that B-class and W-class ECM differ in that in the former the embedded subject A-moves to a matrix position (say, for case). An alternative view, popular for many years, is that these are cases of true ‘*Exceptional Case Marking*,’ which involve the embedded subject moving to the edge of the TP/CP domain where it can get case from the matrix verb. So we could avoid the problems that A-movement to the matrix clause posed (i.e. the wrong location of the property abstract in the composition). This would be an odd movement, however, since it would operate syntactically like A-movement (case checking) but would be interpreted as A-bar movement (abstraction). We’re then faced with why, in general, non-reflexive embedded subjects don’t abstract if movement for case is what gives us a property. We’re also faced with explanations for the W- and B-class syntactic contrasts. One way to avoid these problems is to suggest that B-class ECM subjects are case-marked via (long-distance) Agree (Chomsky 2000) but then A-bar moved to the clause edge. Again, though, nothing would force this movement for reflexives. We could imagine that movement to a phase-edge (Spec,CP) would allow the reflexive to escape the lower clause and be bound in the matrix clause via Principle A. But then we’re back to the A/A-bar distinction problem. If movement to spec edge was abstraction, then it *must* be A-bar movement. Then further movement of the reflexive for binding reasons (say after the lower phase is complete) would have to be A-movement. Again, improper chains are inherently uninterpretable, as already shown above in (39).

To overcome these problems, a very real possibility is that the pronominal part of the reflexive *does* act as an abstraction operator while moving to get case, then disappears from the composition. But the *-self* portion moves to the higher clause because it needs

licensing. This wouldn't be improper movement because we would have two chains: movement of the whole reflexive to the phase edge to avoid PIC (Phase Impenetrability Condition) violations with respect to Agree (therefore Case licensing). All ECM subjects would do this but non-pronouns will still have to remain in the composition (like in normal A-movement) due to a Principle of Full Interpretation (Chomsky 1995). However, the *-self* portion in reflexives would then excorporate and move to the higher clause (40).



The movement of *-self* allows the pronoun to abstract downstairs, while still establishing a relation with the matrix clause. The difference between W- and B-class infinitives would boil down to whether this extra movement of *-self* was allowed. This final stab at the property approach to *de se* requires a number of stipulations. I think that it will in general work—but crucially it is only motivated by the analysis of *de se* to be advanced here and not the Property-level analysis. The second *-self* chain needs to move in B-class infinitives for a principled reason, and why that leads to *de se* needs explaining. In what follows I present independent evidence that just such a reason exists and why it is associated with *de se*. A morpheme, one that creates Strong Reflexivity and derives *de se* in attitude ascriptions, needs to be licensed in the matrix clause. We'll see that solutions based on property-level complements and pronoun movement can be dispensed with.

### 3. Strong Reflexivity + De Re = De Se

The solution to obligatory *de se* in ECM contexts does not lie in the semantic type of the complement. Instead obligatory *de se* is a result of morphology that operates on the propositional attitude verb itself. What we have learned from Lewis (1979) is that *de se* is a *de re* attitude with an Acquaintance Relation of identity. The semantics for *de re* belief is repeated below.

(41) *de re* belief

- a.  $[\mathbf{believe}_{re}] = \lambda P.\lambda y.\lambda x.\lambda w.\exists R.[\text{Acqaint}(R) \wedge R(x)(y)(w) \wedge \forall \langle x', w' \rangle \in \text{Dox}(\langle x, w \rangle): P(\iota z.R(x')(z)(w'))(w')]$
- b. given any pair  $\langle x', w' \rangle \in \text{Dox}(\langle x, w \rangle)$ , (34a) is true iff
- i. **there is an Acquaintance Relation R s.t. x bears R uniquely to y in w**
  - ii. the unique individual z that x' bears R to in w' has the property P in w'

The Acquaintance Relation is existentially bound, so for an attitude ascription following the formula in (41) to be true there simply needs to be an Acquaintance Relation. In some sense, this is an elegant result, since the way in which an attitude holder is acquainted with a *res* is not obviously linguistically-encoded. *De se* is a case where the Acquaintance Relation that is supplied is one of identity. Take a scenario where Fred, now sober, sees Fred on TV, recognizes that it's indeed himself, and believes *de se* that he's a great president. Here one Acquaintance Relation can be 'Seeing-x-on-TV', but in this case it is also identity. The relation of Identity satisfies the Acquaintance Relation and in this case Fred ascribes the Property of being a great president to the unique z whom his doxastic counterpart bears the relation of identity to. But there is no guarantee that identity will be the Acquaintance Relation that we contextually supply and, *a fortiori*, no way to ensure this from the syntax. In order to achieve *de se* attitudes in these cases we need to constrain what kind of Acquaintance Relation can be contextually supplied. I propose

that just such a constraint comes from the syntactic representation of B-class ECM constructions via an abstract reflexive morpheme, licensed by the overt reflexive morpheme *-self*.

### 3.1 The limits of standard reflexivity

The solution for *de se* in B-class ECM involves reflexives moving to the matrix clause. In order for reflexives to do the job, we have to recognize a much stronger form of reflexivity. The kind of binding that holds between the matrix subject and the embedded subject in a *de se* report cannot be just regular binding, since even in *de re* reports we can have a standard binding relation between the attitude holder and the embedded subject. For instance, in the *de re* reports we are familiar with, the embedded pronoun was bound. Recall the representation from (36) above in §2.0. A reflexive embedded subject will work the same way (42):

(36) Fred believes that he is a terrible president. *de re attitude*

Fred  $\lambda x$  [x believes that x is a terrible president]

(42) Fred believes himself to be a terrible president *de se attitude*

Fred  $\lambda x$  [x believes x to be a terrible president]

These are equivalent to (43) once the lambda term is reduced:

(43) Fred believes Fred to be a terrible president

Once we interpret (43) following the schema of *de re* attitudes, we simply get a *de re* belief about Fred, and the Acquaintance Relation *need* not be one of identity. The problem with standard reflexive relations, defined below in (44), is that they simply say that all members have to bear the relation to themselves. That does not preclude other pairs from possibly being in such a relation.

(44) *Standard reflexivity*

a binary relation R is reflexive iff  $\langle a, a \rangle$  is in R, for every a in the domain of R.

Now if we try to say that the Acquaintance Relation in a *de se* report is reflexive, that will simply entail that, in our example, Fred bears R to Fred, i.e. *de re*.

Here's an illustration of just what standard reflexivity is (Partee et al 1986) and why it is too weak. Using sets for now, take the relation 'having-the-same-birthday-as' B:  $B =_{\text{def}} \{ \langle a, b \rangle : a \text{ has the same birthday as } b \}$ . And take the domain of individuals below, with their birthdays listed to the right.

(45)	Fred	May 12
	Julie	April 29
	Brenda	November 14
	Fritz	April 29

The following four pairs are in B:  $\langle \text{Fred}, \text{Fred} \rangle$ ,  $\langle \text{Julie}, \text{Julie} \rangle$ ,  $\langle \text{Brenda}, \text{Brenda} \rangle$ , and  $\langle \text{Fritz}, \text{Fritz} \rangle$ . This is what makes it reflexive. But nothing precludes other pairs in B. So for instance, the pair  $\langle \text{Julie}, \text{Fritz} \rangle$  is in B as well. The point is that a reflexive relation, in the most technical sense, is one in which there are pairs like  $\langle \text{Julie}, \text{Julie} \rangle$  in R—call them identity pairs—but just as easily other pairs as well. Nothing about a reflexive relation

changes what it means to *have the same birthday as*: everyone has the same birthday as themselves, of course, but distinct people share birthdays as well. And the same holds for natural language predicates that are ‘reflexivized’ through syntactic means. Take (46a) with a translation in (46b):

- (46) a. Fred<sub>i</sub> admires himself<sub>i</sub>  
 b. Fred [ $\lambda x$ . admire(x,x)]

(46) is true iff  $\langle \text{Fred}, \text{Fred} \rangle$  is in the relation define by the verb,  $\text{Admire} =_{\text{def}} \{ \langle a,b \rangle: a \text{ admires } b \}$ . We get reflexivity because of the lexical item/variable *himself* and the syntactic configuration that gives rise to Principle A, but nothing about the predicate *admire* requires this: you can *admire* people other than yourself.

This is why even if we have reflexive-style binding between an attitude holder and a *res*, we simply get *de re* belief about oneself. Nothing about how the attitude holder is acquainted with himself is entailed—it could be through identity but it doesn’t have to be. What we need to do is ensure identity between the attitude holder and the *res*, and ensure that even in the attitude holder’s doxastic alternatives there is identity. And this will have the effect, as I will show below, that the Acquaintance Relation must be one of identity.

### 3.2 Inherent reflexivity

Does natural language have relations that are constrained so that they only have pairs like  $\langle a,a \rangle$  in them? Yes. Some predicates, the so-called inherently reflexive

predicates (Reinhart 1996), describe actions that only hold between identical arguments.

Consider the alternation of the verb *move*.<sup>9</sup>

- (47) The man moved himself across the room. *Other action directed toward the self*  
cf. I moved the man across the room.
- (48) The man moved across the room. *Inherently reflexive predicate.*

In the first case, *move* is a transitive relation, call it *move*<sub>2</sub>; here the predicate has been ‘reflexivized’ in the familiar way: this sentence is true if the pair ⟨the man, the man⟩ is in the Relation *move*<sub>2</sub>. This amounts to an action directed toward oneself. (47) can describe someone in a wheel-chair, who moves himself. But this relation could equally hold between two distinct individuals, say if I push the man in the wheelchair. In contrast, the surface intransitive form in (48) is inherently reflexive—call it *move*<sub>1</sub>. To *move* in this sense is something only one can do to, or by, oneself. Inherently reflexive predicates do not involve the kind of reflexive operation as formulae with reflexives in them do: as we saw, that just amounts to an other-directed action that is directed at the self. I’ll call these *self-as-other* actions.

In English, there is no systematic alternation between inherently reflexive (self-action) and non-inherently reflexive (self-as-other action) predicates and there appears to be no systematic form of morphology that signals the difference. So while a reflexive is used in the non-inherently reflexive sentence in (47), the same sentence can describe a self-action, although the intransitive form is preferred in this case. And it is possible to use (48) to describe the chair-bound man’s action, perhaps by extension or metonymy.

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<sup>9</sup> Leigh Brown (1996) offers a comparison of *de se* and inherent reflexivity, but I believe it suffers from not distinguishing between standard reflexivity and a stronger notion of reflexivity. I thank A. Krazter for

Some verbs are ambiguous between inherent and non-inherent reflexivity. (49) can be read in two ways, with continuations helping to disambiguate in (a) and (b) below.

(49) Fred raised his hand...

- |                          |                             |
|--------------------------|-----------------------------|
| a) because it was asleep | <i>self-as-other action</i> |
| b) to ask a question     | <i>self-action</i>          |

The non-inherent interpretation in (a) involves Fred taking one hand and literally raising his other hand, just as he would raise a classmate's hand. The inherent interpretation in (b) is something only Fred can do to himself, raising his arm without there being any external agent.

In some languages the distinction has overt morphological marking in certain contexts. Relevant is ECM in Dutch. With the complex anaphor *zichzelf* in (50a), Baron von Münchhausen is performing the physically improbable act of pulling himself out of the swamp, perhaps grabbing himself by the shoulders and throwing himself out of the water. The simplex *SE* anaphor *zich* in (50b) is used to describe the expected meaning where the Baron pulls himself out of the swamp in the way only one can do oneself.

(50) *Dutch: self/ zich vs. self-as other/zichzelf* (Reinhart and Reuland 1993)

- |                |        |            |     |        |          |
|----------------|--------|------------|-----|--------|----------|
| a. Münchhausen | trok   | [zichzelf  | uit | het    | moeras]. |
| b. Münchhausen | trok   | [zelf      | uit | het    | moeras]. |
| Münchhausen    | pulled | himself/SE | out | of the | swamp    |

In order to describe the difference in the kind of reflexivity involved in these cases, we must stipulate that the inherent actions are those actions which can only hold between

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showing me just how important this distinction is.

identical arguments.<sup>10</sup> That is, just as with *de se* reports the inherent predicate *trok zich*, ‘pull self’ can *only* hold between identical arguments. Call the stipulation—a stipulation in the sense that it’s formulated as a condition on some predicates—Strong Reflexivity.<sup>11</sup> So in contrast to standard reflexive operations (repeated from 44), Strong Reflexivity requires identity between two arguments (51).

(44) **Standard reflexivity**

a binary relation R is reflexive iff  $\langle a, a \rangle$  is in R, for every a in the domain of R.

(51) **Strong Reflexivity**

a binary relation R is Strongly Reflexive iff whenever  $\langle a, b \rangle$  is in R, then  $a = b$ .

What (51) amounts to is a constraint on R: that only identical arguments can satisfy the relation. In the Dutch cases, R is *pull*, a transitive verb with whatever lexical semantics we want to give to it. With something like (51) added to it, we can still think of it as a *pulling* action, but inherently reflexive *pulling* expresses a relation that one can only bear to oneself.

In *de se* reports we saw that we want the same kind of identity to hold between the attitude holder and the *res* so that when it comes to resolving the way an attitude holder is acquainted with himself, it must at the very least be through identity. That is, we want a *de se* belief to be the kind of belief one can only bear to the self. In languages where strong/inherent reflexivity is morphologically distinguished from weak reflexivity, such as Swedish, surprising correlations between *self-action* and *self-attitudes* are found.

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<sup>10</sup> It might seem that in many of the inherently reflexive predicates we shouldn’t be talking about transitivity in this way—there is just one argument in many of these unaccusative, inherent predicates. But if we are to make any sense connection at all between *move*<sub>1</sub> and *move*<sub>2</sub> then some reference to two arguments must be made.

### 3.3 Swedish ‘sig’: inherent and *de se* reflexives

Swedish has an ECM construction that only tolerates Strong Reflexivity between the matrix subject and the IS. And the only kind of reflexive found in these contexts is that which is found in inherently reflexive predicates—morphology that is required in self-action predicates. Furthermore, in attitude report ECM contexts, they must be interpreted *de se* (p.c. Katrina Lundin)

Here’s the argument in detail. Swedish has a number of ECM-like constructions. Perception verbs can case mark the subject of their complement infinitival subject (Lundin 2003):

- (52) a. Kalle sag Lisa i spegeln. (Lundin 2003, p104)  
       Kalle saw Lisa in mirror-the  
       ‘Kalle saw Lisa in the mirror.’
- b. Kalle sag sig/sig sjalv i spegeln. (Lundin 2003, p107)  
       Kalle saw self/her self in mirror-the  
       ‘Kalle saw herself in the mirror’

Another class of (bare) infinitival-taking verbs, though, shows a much tighter restriction on what can appear as the subject of the infinitive; only a simplex anaphor is possible:<sup>12</sup>

- (53) a. Han onskar sig kunna springa 50 kilometer. (Lundin 2003)  
       He wishes REFL be-able-to run 50 kilometers.  
       ‘Hans wishes that he could run 50 kilometers’
- b. Han tycker sig kanna drottningen.  
       He thinks REFL know queen-the.  
       ‘He thinks that he knows the queen.’
- c. Han tror sig ha dodat kungen.

<sup>11</sup> I owe this term to A. Kratzer, and assistance in its precise formulation below to R. Bhatt and A. Kratzer.

<sup>12</sup> Swedish also has ECM with infinitives marked by *att* ‘to’; these allow lexical ECM subjects (Johnson and Vikner 1998)

He thinks REFL have killed king-the  
 ‘He thinks that he has killed the king.’

The important point for (53a-c) is that ‘sig’ must be interpreted *de se*. Furthermore, A DP cannot be the in the relevant position if it isn’t a reflexive:

- (54) a. \*Han onskar Kalle kunna springa 50 kilometer.  
 He wishes Kalle be-able-to run 50 kilometers.  
 ‘Hans wishes that Kalle could run 50 kilometers’
- b. \*Han tycker Lisa kanna drottningen.  
 He thinks Lisa know queen-the.  
 ‘He thinks that Lisa knows the queen.’
- c. \*Han tror Olle ha dodat kungen.  
 He thinks Olle have killed king-the.  
 ‘He thinks that Olle has killed the king.’

Importantly, the behavior of these constructions mirrors that of inherently reflexive predicates. These are obligatorily self-directed actions or states and must be marked by the reflexive anaphor *sig*, just as in the ECM cases:

- (55) a. Kalle vande sig om  
 Kalle turned REFL around  
 ‘Kalle turned around’
- b. Kalle nojde sig med två veckors semester.  
 Kalle contented REFL with two weeks vacation.  
 ‘Kalle was contented with two weeks vacation.’
- c. Lisa stakade sig upp för backen  
 Lisa pushed REFL along up the hill  
 ‘Lisa pushed herself up the hill= Lisa skied up the hill’

Just like in ECM, *sig* cannot be replaced by non-reflexive DPs. That is *nojde* cannot have another DP as its object:

- (56) a. \*Kalle nojde Lisa med tva veckors semester  
 Kalle contented Lisa with two weeks vacation

Even more striking, both the inherently reflexive verbs and the ECM verbs do not tolerate the complex reflexive anaphor *sig sjalv*. While the direct perception verbs tolerate this, neither the ECM nor the inherently reflexive predicates allow the complex anaphor in this position (Lundin 2003):

- (57) *Direct perception ECM*  
 a. Honsag [sig sjalv] i spegeln.  
 She saw herself in mirror-the  
 ‘She saw herself in the mirror’

*Inherent reflexive predicate*

- b. \*Lisa stakade [sig sjalve] uppfor backen.  
 Lisa pushed herself up the hill.  
 ‘Lisa pushed herself up the hill.’

*ECM*

- c. \*/??Hon trodde [sig sjalv] vinna loppet  
 She believed herself win race-the
- d. \*/??Han tyckte [sig sjalv] vara vacker den dagen.  
 He thought himself beautiful that day
- e. \*/??Han sade [sig sjalv] vara beredd att arbeta hart.  
 He said himself be prepared to work hard.

The correlation between inherently reflexive verbs and ECM of this type exists because they are one and the same. ECM shows us that in some intensional contexts in Swedish, the verbs are self-ascribing, just like their extensional counterparts are self-actions. The form of the reflexive is appropriate for a Strongly Reflexive relation.

### 3.4 The semantics of Strong Reflexivity

In order to implement Strong Reflexivity to characterize inherent reflexives and *de se* attitudes, we need to do several things. The first three tasks are semantic ones. We need to relativize (51) to the intensional domain: in *de se* attitudes we have to worry about the relation the attitude holder bears to himself in his doxastic alternatives, since it is in that modality that self-belief leads to *de se*. Second, we need some way of taking normal predicates that express n-place relations and constrain them to express Strongly Reflexive relations—we need to derive inherently reflexive predicates via a semantic operation. Section 3.5 will show how to interpret such Strongly Reflexive relations in the case of *de re* belief. We will see that Strong Reflexivity applied to *de re* attitude ascriptions leads to *de se* attitudes; and conversely, how *de se* attitudes will require Strong Reflexivity.

The second set of tasks is syntactic. We need to make Strong Reflexivity operate on verbs to deliver conditions on predicates like in (51). The claim involves a covert morpheme above the intensional predicate in English. In Section 4 I will show how a compositional analysis of Strong Reflexivity plays out, and why in English such Strong Reflexivity is licensed by the syntactic structure of B-class infinitives but not W-class infinitives, due to movement of the IS reflexive *-self*.

Revising (51) to accommodate intensional relations requires (59), which says that a Strongly Reflexive intensional relation requires identity of its arguments in all possible worlds.

- (59) **Strong Reflexivity** (intensional version)  
 an intensional binary relation R is Strongly Reflexive iff for all possible worlds *w*, whenever  $\langle a, b, w \rangle$  is in R, then  $a = b$ .

Returning to our meaning for *de re* belief from above, we need (59) to constrain the meaning in such a way that the *res* argument and the attitude holder are related by Strong Reflexivity. If we want to preserve a connection between inherent and non-inherently reflexive versions of the same predicate, as in the case of  $move_2 \sim move_1$ , we need to invent a process whereby a standard n-place relation can be constrained to be a Strongly Reflexive n-place relation. You see, (59) is just a condition on inherently reflexive predicates; it's a meaning postulate. In many cases, this is perhaps all we need since most inherently reflexive predicates seem to be born that way. But when there are (lexical) alternations between weak and strong reflexive verbs, something needs to operate on the predicate and return a predicate that obeys (59). Call the operator *!SELF* (on analogy to the strong 'exactly' semantics of  $!\exists$ ). *!SELF* will, in the simplest case, be a functor on a transitive verb, like  $move_2$ , and require that if any two arguments are in that relation, they must be identical. *!SELF* is a function, here, from two place relations to two place relations: the first conjunct merely substitutes variables, the second conjunct constrains them. Here's a first stab at *!SELF*, as it applies to the meaning of  $move_2$  to derive  $move_1$ :

(60) *!SELF* — *version 1*

$$[!SELF] =_{\text{def}} \lambda R_{\langle e, e, t \rangle} . \lambda y . \lambda x . R(x)(y) \wedge \Box y = x$$

(61) *verb meaning*

$$[move_2] =_{\text{def}} \lambda v . \lambda z . \mathbf{move}(z)(v)$$

(62) *composition of !SELF and move*

$$\begin{aligned} [!SELF] ([move]) &= [\lambda R_{\langle e, e, t \rangle} . \lambda y . \lambda x . R(x)(y) \wedge \Box y = x](\lambda v . \lambda z . \mathbf{move}(z)(v)) \\ &= \lambda y . \lambda x . [\lambda v . \lambda z . \mathbf{move}(z)(v)](x)(y) \wedge \Box y = x \\ &= \lambda y . \lambda x . \mathbf{move}(x)(y) \wedge \Box y = x \end{aligned}$$

This will not do. The final line in (62) just says that the two arguments that saturate *move* must be identical. It doesn't say anything about the relation *move*, nor does it reduce the arity of the verb in the expected way for intransitive, inherently reflexive predicates. In order to modify the verb meaning in a deeper way, we actually have to decompose verb meanings in the event-based framework of Kratzer (1996). This will allow us to ensure that the verb meaning itself is constrained in the appropriate way, not just the arguments we saturate it with. Assume, then, a meaning for *!SELF* below in (64). And a meaning for the lower VP that goes in to deriving transitive *move* in (63), a function from entities to sets of eventualities. I use 's' as a variable over the domain of eventualities as well as worlds.<sup>13</sup> *!SELF* now makes reference to the VP event(uality) argument and to the (unique) Agent of that event. The second conjunct ensures that any Agent of that *moving* event is identical to the internal argument, in all possible worlds.

(63) *!SELF* — version 2

$$\llbracket \mathbf{!SELF} \rrbracket =_{\text{def}} \lambda P_{\langle e, t \rangle}. \lambda x. \lambda s. P(x)(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = x ]$$

(64) *the verb minus external argument*

$$\llbracket \mathbf{move} \rrbracket =_{\text{def}} \lambda x. \lambda s. \text{move}(x)(s)$$

(65) *composition of !SELF and move*

$$\begin{aligned} & \llbracket \mathbf{!SELF} \rrbracket(\llbracket \mathbf{move} \rrbracket) \\ &= [ \lambda P_{\langle e, t \rangle}. \lambda x. \lambda s. P(x)(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = x ] ](\lambda x. \lambda s. \text{move}(x)(s)) \\ &= \lambda x. \lambda s. [ \lambda x. \lambda s. \text{move}(x)(s) ](x)(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = x ] \\ &= \lambda x. \lambda s. \mathbf{move}(x)(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = x ] \end{aligned}$$

e.g. **!Fred !SELF-moved**

$$\begin{aligned} &= [ \lambda x. \lambda s. \text{move}(x)(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = x ] ](\text{Fred}) \\ &= \lambda s. \text{move}(\text{Fred})(s) \wedge \Box \forall y [ \text{Agent}(y)(s) \rightarrow y = \text{Fred} ] \end{aligned}$$

<sup>13</sup> From hereon I grossly abuse the distinction between the eventuality argument and the world argument.

The final line of (65) now characterizes an event of *moving* that is Strongly Reflexive: whatever argument saturates the internal argument of the *moving* event will be identical, in all possible worlds, with the (unique) agent of that moving event. We can at this point leave the formula as it is, in which case it is syntactically intransitive, while still making reference to two distinct argument slots (the internal argument of *move* and the Agent). Or we compose (65), after the internal argument is saturated, with an external-argument-introducing head, and introduce a second argument syntactically. The transitive inherent reflexive is shown below, with Agent combining with (65) via Event Identification (Kratzer 1996). I've saturated the internal argument with a variable '1', which will necessarily be bound by the external argument via Strong Reflexivity. This kind of derivation would correspond to an inherently reflexive meaning of *John moved himself across the room*. It will also characterize the Swedish inherent reflexives from section 3.2 if we take 'sig' to saturate the internal argument position.

(66) *Transitive inherent reflexives*

- a. Kalle vande sig om (Lundin 2003)  
 Kalle turned REFL around  
 'Kalle turned around'

b. **[[Kalle vande sig]]**

$$\begin{aligned} & \text{[!SELF]}(\text{[vande]}) \\ &= [\lambda P_{\langle e(s,t) \rangle} \lambda x. \lambda s. P(x)(s) \wedge \Box \forall y [Agent(y)(s) \rightarrow y = x]](\lambda x. \lambda s. \text{vande}(x)(s)) \\ &= \lambda x. \lambda s. [\lambda x. \lambda s. \text{vande}(x)(s)](x)(s) \wedge \Box \forall y [Agent(y)(s) \rightarrow y = x] \\ &= \lambda x. \lambda s. \text{vande}(x)(s) \wedge \Box \forall y [Agent(y)(s) \rightarrow y = x] \end{aligned}$$

$$\begin{aligned} & \text{[!SELF vande]}(\text{[sig}_1\text{]}) \\ &= [\lambda x. \lambda s. \text{vande}(x)(s) \wedge \Box \forall y [Agent(y)(s) \rightarrow y = x]](1) \\ &= \lambda s. \text{vande}(1)(s) \wedge \Box \forall y [Agent(y)(s) \rightarrow y = 1] \end{aligned}$$

$$\begin{aligned}
& \llbracket \mathbf{Agent} \ \mathbf{!SELF} \ \mathbf{vande} \ \mathbf{sig} \rrbracket (\llbracket \mathbf{Kalle} \rrbracket) \\
& = [\lambda x. \lambda s. \mathbf{Agent}(x)(s) \wedge \mathbf{move}(1)(s) \wedge \Box \forall y [\mathbf{Agent}(y)(s) \rightarrow y = 1]] (\mathbf{Kalle}) \\
& = \lambda s. \mathbf{Agent}(\mathbf{Kalle})(s) \wedge \mathbf{move}(1)(s) \wedge \Box \forall y [\mathbf{Agent}(y)(s) \rightarrow y = 1]
\end{aligned}$$

In order to deal with verbs of propositional attitudes, we again have to enrich the composition of a verb like *believe*. Assume, then, that *de re* belief has two internal arguments: a *res* and a Property P, as well as an eventuality argument (this will correspond to a belief-state, unlike above where the eventuality argument was *eventive*). The external argument, the attitude holder, can be added by a separate head,  $\mathbf{Voice}_{\mathbf{HOLDER}}$ . *!SELF* will apply to the VP meaning after the Property-level complement argument has been saturated. To demonstrate a full composition I saturate the property argument with ‘Q’.

$$(67) \quad \llbracket \mathbf{believe}_{\mathbf{re}} \rrbracket =_{\text{def}} \lambda P. \lambda x. \lambda s. \text{belief } P \text{ de re of } x \text{ in } s$$

$$\begin{aligned}
(68) \quad & \llbracket \mathbf{!SELF} \rrbracket (\llbracket \mathbf{believe}_{\mathbf{re}} \ \mathbf{Q} \rrbracket) \\
& = [\lambda P_{\langle e, \langle s, t \rangle \rangle}. \lambda x. \lambda s. P(x)(s) \wedge \Box \forall y [\mathbf{Holder}(y)(s) \rightarrow y = x]] (\lambda x. \lambda s. \mathbf{believe}(\mathbf{Q})(x)(s)) \\
& = \lambda x. \lambda s. [\lambda x. \lambda s. \mathbf{believe}(\mathbf{Q})(x)(s)](x)(s) \wedge \Box \forall y [\mathbf{Holder}(y)(s) \rightarrow y = x] \\
& = \lambda x. \lambda s. \mathbf{believe}(\mathbf{Q})(x)(s) \wedge \Box \forall y [\mathbf{Holder}(y)(s) \rightarrow y = x]
\end{aligned}$$

$$\begin{aligned}
(69) \quad & \llbracket \mathbf{Voice}_{\mathbf{HOLDER}} \rrbracket (\llbracket \mathbf{!SELF} \ \mathbf{believe} \rrbracket) \quad \textit{by Event identification} \\
& = \lambda x. \lambda s. \mathbf{Holder}(x)(s) \wedge \lambda s. \mathbf{believe}(\mathbf{Q})(x)(s) \wedge \Box \forall y [\mathbf{Holder}(y)(s) \rightarrow y = x]
\end{aligned}$$

From hereon I assume that the external argument is added this way, but I will not show the application of  $\mathbf{Voice}_{\mathbf{HOLDER}}$ . (69) demonstrates, then, how the pieces of morphological meaning compose with *de re* belief to give Strongly Reflexive *de re* belief. That takes care of the formal semantics. Now the interpretation. Recall our definition for *de re* belief, repeated below. I am going to add the identity condition of *!SELF* as one of the sub-conditions for the meaning of *de re* belief that has been composed with *!SELF*.

(70) **!SELF-believe** =<sub>def</sub>  
 $\lambda P.\lambda x.\lambda z.\lambda s. z \text{ believe } P \text{ de re of } x \text{ in } s \wedge \Box \forall y [\text{Holder}(y)(s) \rightarrow x = y]$

(71)  $[[z \text{ !SELF-believes } P \text{ de re of } x \text{ in } s]]$  iff

given any pair  $\langle z', s' \rangle \in \text{Dox}(\langle z, s \rangle)$

(i) there is an Acquaintance Relation  $R$  s.t.  $z$  uniquely bears  $R$  to  $x$  in  $s$

(ii) the unique individual that  $z'$  bears  $R$  to in  $s'$  has the property  $P$

(iii)  $\forall y [\text{Holder}(y)(s) \rightarrow x = y]$

### 3.5 Deriving *de se* from Strong Reflexivity

In what follows, I sketch what can be thought of as the beginnings of an informal proof that shows that whenever there is Strong Reflexivity holding between the *res* and the subject, then there must be an Acquaintance Relation of identity between the two. And conversely, that whenever there is an Acquaintance Relation of identity, then the relation will be Strongly Reflexive. To get a sense of the argument, consider inherent reflexives: these verb express Strongly Reflexive relations, relations that can only hold of identical arguments. Similarly, a *de se* attitude is an attitude that can only hold of identical arguments: you can only believe something *de se* of yourself. So *de se* attitudes result from Strong Reflexivity.

Returning to our original sentence, the obligatorily *de se* report in (73). Assume for now that reflexive is bound in the normal way: that is, it is interpreted as a variable which is then bound by the matrix subject.

(73) a. Fred believes himself to be a fool. *De se/\*de re*

b.  $[[\mathbf{Fred}_1 \text{ !SELF-believes himself}_1 \text{ to be a fool in } s]]$  is true, iff

$[[\mathbf{Fred}]] \text{ !SELF-believes } de \text{ re of } [[\mathbf{Fred}]] \text{ the property } [[\mathbf{to-be-a-fool}]]$ , iff

given any pair  $\langle z', s' \rangle \in \text{Dox}(\langle \text{Fred}, s \rangle)$

- (i) there is an Acquaintance Relation R s.t. Fred uniquely bears R to Fred in s
- (ii) the unique individual that  $z'$  bears R to in  $s'$  is a fool
- iii)  $\Box \forall y [\text{holder}(y)(s) \rightarrow \text{Fred} = y]$

The important part is sub-condition (iii). It says that in all possible worlds—which include those in Fred’s doxastic alternatives—the holder of the belief state must be identical to the *res*. For the sentence to be true, though, Fred must bear a relation, an Acquaintance Relation, to Fred in the evaluation world. *!SELF ensures* that in order for Fred to hold the belief ascribed in (73b), the *res* must be Fred, and no one else. The conditional in (iii) would be false if Fred was the holder of the attitude but did not bear identity to the *res*. But furthermore—and here’s where *de se* comes in—since *de re* belief is now Strongly Reflexive, it is a belief only Fred can bear to Fred. And since the relation that Fred and Fred enter into is an Acquaintance Relation, then that must be Strongly Reflexive. In all of Fred’s doxastic alternatives, too, Fred must bear that same Strongly Reflexive Acquaintance Relation to the *res*. So whatever Acquaintance Relation is chosen to characterize the way Fred is acquainted with the *res*, it cannot be one that Fred could bear to someone else—that is, it cannot *just* be a weakly reflexive relation such as ‘seeing-on-TV’. In fact, no Acquaintance Relation that Fred could in some possible situation bear to someone else, like *seeing*, *hearing*, or any other relation that allows for ‘self-as-other’ acquaintance, will do. Such relations are fraught with too many possibilities for the attitude holder and the *res* to be non-identical (just as standard reflexive relations can have all sorts of pairs of the sort  $\langle a, b \rangle$  where  $a \neq b$ ). So the person Fred identifies as himself in his doxastic alternative ( $z'$ , above) can only bear a Strongly Reflexive relation to the unique individual that has the property P. In sum, to hold a

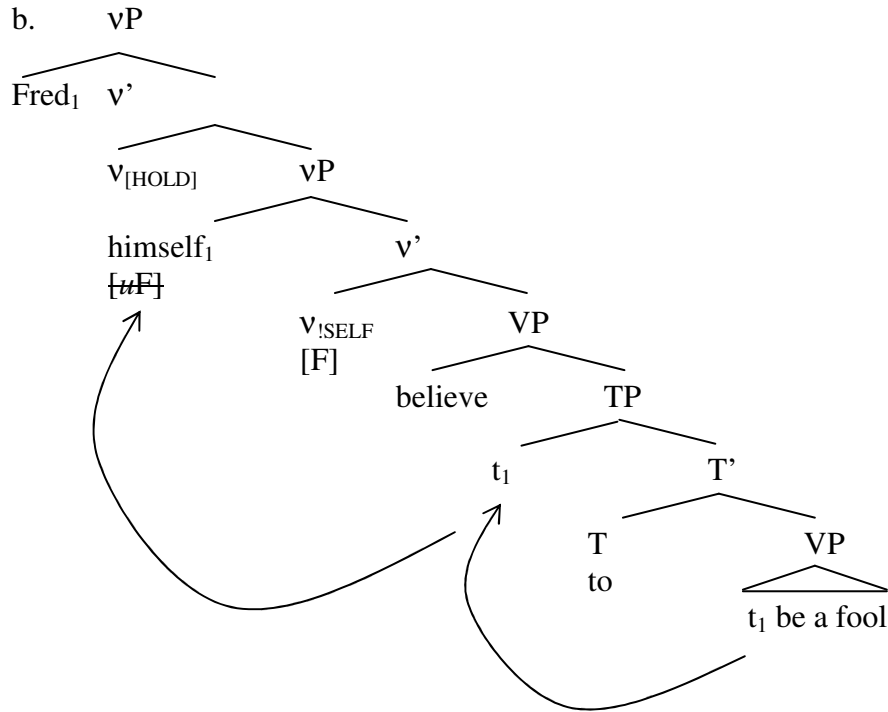
Strongly Reflexive *de re* belief is to hold a *de se* belief, since to hold a Strongly Reflexive belief is to hold a *de re* belief under the relation of identity.

None of this rules out other sub-Acquaintance Relations. For instance, in a *de se* scenario in which Fred finally recognizes himself on TV and ascribes properties *de se* to himself, then surely he is also acquainted with the *res* via a weakly reflexive relation. But what counts for *de se* is the identity relation that holds in Fred's doxastic alternatives. Our next task is to ensure that *!SELF* be present obligatorily in obligatory *de se* sentences, like B-class ECM with reflexives.

#### 4.0 Syntax-Semantics

The above discussion showed that a Strongly Reflexive *de re* belief is a *de se* belief. To ensure that we have a *de se* belief, then, we must ensure that the *believe* relation is Strongly Reflexive. The B-class ECM cases with reflexive subjects must give rise to Strong Reflexivity. However, we have seen that, in general, inherently reflexive predicates—which are now construed as those that express Strongly Reflexive relations—are not derived by the normal binding operations of standard reflexivity. Instead, it is an added constraint on the kind of relation that, say, *moving* or *raising one's hand is*, in comparison to the weakly reflexive counterparts. Moreover, there is no systematic alternation between both kinds of reflexivity. And yet, in the case of Strongly Reflexive *belief*—in B-class infinitives—we want a way to derive inherent reflexivity. That is, B-class infinitives are not always *de se*: there has to be a reflexive subject in the infinitive. It won't do to just lexically specify infinitive taking *believe* as inherently reflexive (and therefore Strongly Reflexive). That won't capture the facts.



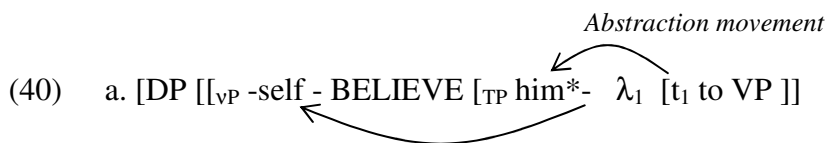


The reflexive subject—which we know from §1.2 enters a syntactic relation with the matrix predicate—will raise and be checked by the covert morpheme  $v_{!SELF}$ . If it didn't raise then it would fail to be licensed under Principle A of the binding theory, and moreover the semantic contribution of  $!SELF$  would not be ensured. That is, without the requirements of the overt anaphor, there would be no reason that  $v_{!SELF}$  be present in the structure. I leave open the question of whether all B-class infinitival subjects, reflexive or not, also raise for case reasons. When reflexives move to the matrix clause, their presence licenses Strong Reflexivity: they actually enter a semantic relation with the matrix clause, albeit an indirect one.

A note about how this structure derives the right semantic composition for *de re/de se* belief is necessary. The movement in (74b) is A-movement: the entire reflexive moves, licenses  $!SELF$ , but is interpreted as an argument to the embedded predicate. This means that the complement of the attitude verb is a proposition, not a property, contrary

to the type specifications I have been assuming for *de re* belief. There are two ways to deal with this problem. The first option leaves the composition as it is in (74b) and relativizes the semantics to propositions, so that *de re* belief is application of a proposition to a *res* situation (Kratzer 1998). The *res*, however, in our cases is an ordinary individual, since it is identical to the attitude holder (via Strong Reflexivity). This will not pose a problem since ordinary individuals can instantiate a certain type of situation.

The second option retains the semantic types we have been working with all along but modifies the reflexive anaphor in (74). This option is precisely the proposal I sketched in §2.1 to accommodate the property view of *de se* of Chierchia (1989) and Percus and Sauerland (2003a,b). I repeat the derivation from (40). In this proposal *himself* can be split (see Chomsky 1995 for precedent in dividing the reflexive in this way). The whole complex anaphor moves the edge of the embedded clause (say to be visible to the matrix clause for both case and *!SELF* licensing).



The *-self* portion of the reflexive then excorporates and moves up to license  $v_{[\text{!SELF}]}$ . The embedded pronoun is then free to be abstracted over, or move in the fashion of Percus and Sauerland's *he\**. I noted above that this move was stipulative without some motivation for the extra movement of *-self*: we now have that kind of motivation in *!SELF*. This isn't a retreat, however, to a property view of *de se*: while properties are involved, it is Strong Reflexivity that derives obligatory *de se*. I leave these two

options—self-excorporation with property complement versus *res* situations with propositional complement—open for future research.

#### 4.1.1 The anti-locality of *!SELF* licensing

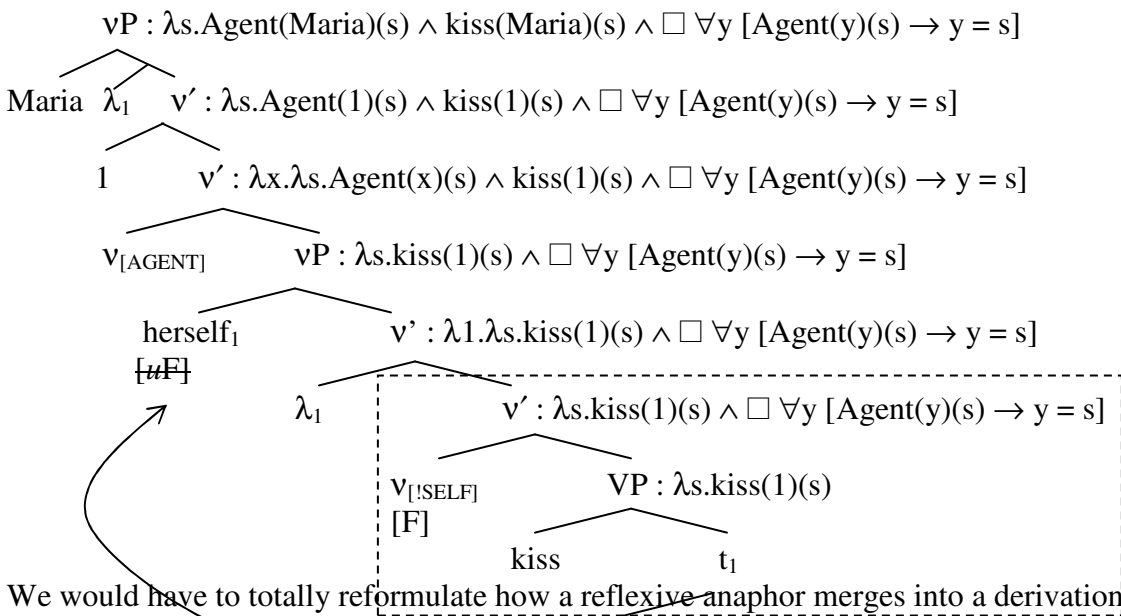
The syntactic (and semantic) formulation of *!SELF* also makes the predication that it must operate over unsaturated VP complements of the type  $\langle e, \langle s, t \rangle \rangle$ . The prediction explains away another concern created by the innovation of  $v_{[!SELF]}$  being visible in the syntactic derivation. Recall that whether a verb can be inherently (and therefore Strongly) reflexive is rather idiosyncratic in English, as is its overt expression across languages. With  $v_{[!SELF]}$  in our toolbox we might expect any transitive verb with a reflexive object can be interpreted as inherently reflexive by the means outlined above for ECM. So (75) could express an (improbable) inherently reflexive action with the derivation in (75b) where the reflexive object serves to license *!SELF*.

- (75) a. Maria kissed herself.  
 b. Maria [ herself<sub>i</sub> [v *!SELF* [VP kissed t<sub>i</sub>]]]

The distinction, however, between a structure like (75) and our familiar B-class infinitives in (74), is that in the latter case the reflexive DP serves as an argument to a predicate (the embedded one) distinct from the predicate undergoing Strong Reflexivity. In contrast, in (75) the reflexive is merged as an internal argument of the very verb that would undergo Strong Reflexivity. Assume that the reflexive moves above VP, leaving a same-type trace. Because the trace saturates the internal argument of the lower VP *kiss*, the complement of *!SELF* is of type  $\langle s, t \rangle$ . The complement is not a property, as in all

cases above, and the internal argument variable is not available for *!SELF* to relate it to the Agent. If anything, as shown below in the composition (76), it creates identity between the agent and the eventuality argument of the lower VP, since this is all that is available when *!SELF* composes with the VP. The result is nonsense, and certainly not the kind of inherent reflexivity we are concerned with.

(76) Failed composition: internal argument is saturated before *!SELF* composes



We would have to totally reformulate how a reflexive anaphor merges into a derivation to prevent it from saturating the internal argument.<sup>14</sup> As a consequence, we rule out the possibility of syntactically deriving a whole class of non-existent inherent reflexives using the method from the B-class ECM movement.<sup>15</sup>

<sup>14</sup> One possibility is that the reflexive moves and abstracts at the edge of VP, before v<sub>[!SELF]</sub> merges. This would create the right property in the right place. See Hestvik (1995) for use of such reflexive movement. If this option exists, it may be possible to derive inherent reflexivity here. However, all cases of reflexive movement of this sort that I am aware of involve movement beyond the VP/vP level (perhaps to INFL), and so will not cause a problem here.

<sup>15</sup> This is not to say that there are not other syntactic ways of deriving inherent reflexivity (see Reinhart 1996 who shows that in some languages inherent reflexivity *is* derived syntactically). Nevertheless, the innovation I have made for English will not lead to this.

The distinction runs deep: *!SELF* licensing by a reflexive in the fashion proposed here will only work if the reflexive is an argument of another predicate as in the B-class ECM cases. Here, the reflexive moved like any other A-movement (vacuously) with the addition that the *-self* morpheme acted like a free-rider to license *!SELF*. But when we want co-arguments of a predicate to be related by Strong Reflexivity, this method will not work. There is no fear, then, that  $v_{[!SELF]}$  will over-generate.

In sum, then, obligatory *de se* was connected to the syntactic facts about ECM through movement of the reflexive. Reflexive ECM subjects are just not licensed in B-class infinitives if they themselves are not licensed by  $v_{[!SELF]}$ , and in turn license,  $v_{[!SELF]}$ . I speculate that control complements—which are likewise obligatorily *de se*—involve a covert Voice head that induces Strong Reflexivity. In fact, Chomsky and Lasnik (1977) propose, for independent reasons, that control (or a class of Equi constructions) involves the deletion of a *-self* morpheme. Alternatively, we might think that the Strongly Reflexive component of control verbs is created as a lexical package, and therefore more like the typical inherent reflexives in English. I leave control open to future research.<sup>16</sup> And finally, nothing in the syntactic representation of finite clauses guarantees *de se*, since nothing in finite clauses guarantees Strong Reflexivity. This picture of *de se* is thus in line with the reductionist tradition in the case of finite clause complements. However, the proposal resembles the other view that there are dedicated syntactic-semantic structures for *de se* (Chierchia's properties). I differ from the latter in just where and how

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<sup>16</sup> In Moulton (ms) I present an argument that Voice heads of various types go into the composition of obligatory control infinitives. In fact, some non-attitude control predicates are Voice heads themselves, accounting for aspects of control phenomenon using an event-semantics. Adding  $v_{[!SELF]}$  to the repertoire of control configurations is a natural extension of this work to attitude control verbs.

those dedicated LFs arise. In the final section I turn to evidence from ellipsis that favors Strong Reflexivity over mere property-level complements.

#### 4.2 Against dedicated *de se* complements

Recall that for Chierchia (1989) and, more recently, Percus and Sauerland (2003a,b), all *de se* reports have a property-level complement. Consequently, the LFs of *de se* attitudes will be structurally different from *de re* attitudes, right down into the embedded clause. On the account above, *de re* and *de se* attitudes have the same LF representation of the complement clause—a proposition. The configuration that leads to *de se* is located in the vP projection in the matrix clause.<sup>17</sup>

Ellipsis can test the two approaches, on the assumption that VP ellipsis targets VP nodes of an LF representation and subsumes most of the structure underneath the VP node. Under the property account, ellipsis targeting the matrix VP should “bring along” *de se* readings in the ellipsis site when the antecedent is a *de se* attitude. This would mean that all ellipses of *de se* reports would be sloppy. A strict reading would have to be *de re*, since a strict reading would require a propositional complement. A *de se* but strict ellipsis is impossible since the subject of the second conjunct would have to be different from the first. Under the Strong Reflexivity view, ellipsis does not have to “bring along” *de se* representations when a VP node is copied.

The facts support the latter view. Take the finite cases first, fixing on a *de se* interpretation for the first conjunct. The ellipsis can be interpreted strictly (76a), or sloppily with a *de se* reading for ‘the people’ (76b). But we can also interpret the first

conjunct *de se* and then interpret the ellipsis in the second conjunct strictly. Crucially, though the second conjunct cannot be *de se*, that wouldn't make sense (76c):

(76) Fred believed that he was a fool, and the people did  $\Delta$  too.

- a.  $\Delta$  = believed that Fred was a fool
- b.  $\Delta$  = self-believed that they were fools
- c.  $*\Delta$  = self-believed Fred to be a fool

(76a) is the hard one for the property account. If the representation of the matrix VP in (76a) is in (76') given Percus and Sauerland (2003a,b), then we would be forced to copy a property when we provide an interpretation for the ellipsis site. In fact, getting at the strict interpretation is going to be hard in the first place. But if (76a) contains a property complement, then we need to copy it if we copy the VP node that dominates it.

(76') *The property representation of de se complements*

a. John  $\lambda x.[_{VP} x \text{ believed } \lambda z.\text{fool}(z)]$  and the people  $\lambda x [_{VP} x \text{ believed } \lambda z.\text{fool}(z)]$  too

(76') corresponds to (76b) and it is the only ellipsis we can get. How could we escape this? Well, there are a number of ways to operate on an antecedent VP, to create an ellipsis-antecedent mismatch. Traces, for instance, can be copied as free and bound by new binders in the ellipsis site. However, “un-doing” a property abstraction is not a

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<sup>17</sup> Recall that one alternative was to take the complement of *!SELF-believe* as a property syntactically (see

legitimate “mismatch” alteration. To see this take control complements, whose complements are (obligatorily) properties under the property account of *de se* (Chierchia 1984, 1989). If “un-doing” an abstraction operation is possible then we would expect (77) to allow the strict-but-non-*de se* ellipsis that (76) allows. But it cannot.

(77) Fred wants to eliminate Social Security, and most bankers do  $\Delta$  too.

$\Delta$  = want to eliminate Social Security

\* $\Delta$  = want Fred to eliminate Social Security

Notice that the verb *want* can take both property and propositional complements (the latter as ECM complements). So we cannot argue that *want* simply requires property complements. Moreover, we cannot argue that there is a ban on shifting from one type of complement to another: that kind of flexibility is just what Chierchia and Percus and Sauerland advocate, and require if they are to account for the (76a). Consequently, the property account predicts that *de se* finite complements behave just like control complements for the purposes of ellipsis. We see that is not true. Where the account goes wrong is representing *de se* in the complement clause at a syntactic level.

The approach taken here does not tie the *de se/de re* distinction to the complement’s type. In fact, I have argued that finite clause cases like (76) ought not to contain any syntactic representation regarding *de se*. (76) simply arises (with strict ellipsis) in the same way it always does, but the choice of Acquaintance Relation will

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(40)). The following argument will not affect that possibility, since it allows the entire reflexive to reconstruct into the embedded clause delivering a proposition complement.

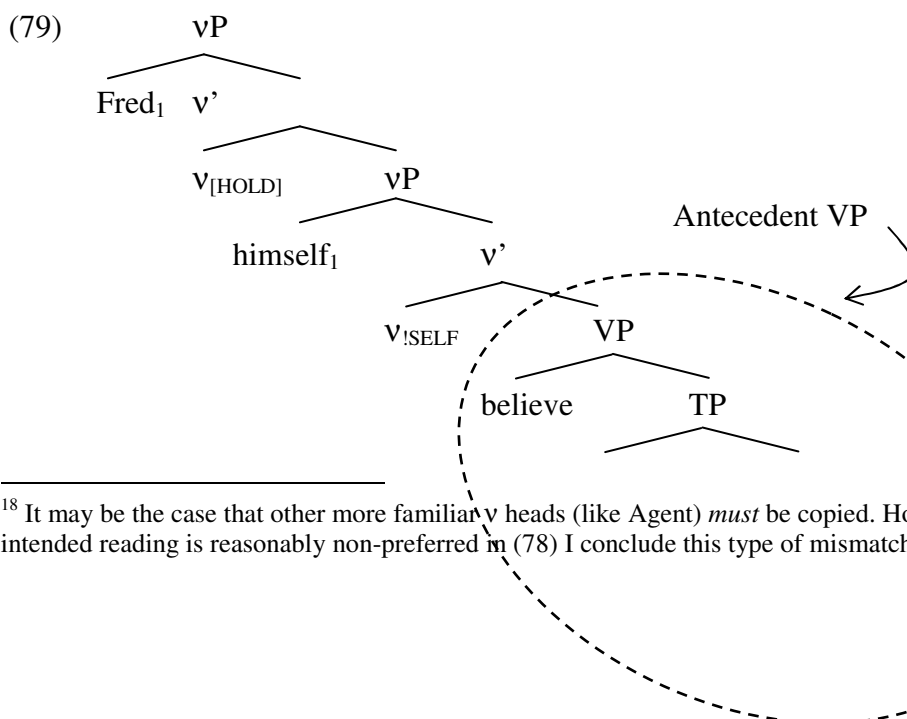
vary depending on the attitude holder in each clause. With a strict reading, *de re* is the only option in the second conjunct.

In the case of ECM the same facts emerge, suggesting again that even though we get strict readings we do not have to “bring along” *de se* (again a sloppy reading with *de se* is possible too):

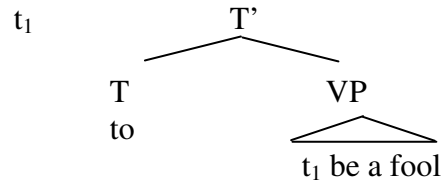
(78) Fred<sub>i</sub> believed himself<sub>i</sub> to be a fool and the people did too.

Δ = believed him<sub>i</sub> to be a fool.

Since the account above using Strong Reflexivity provides a proposition complement, then a strict reading will be possible. (Assume ellipsis allows strict readings for reflexives, e.g. by copying the index on the reflexive, cf. Hestvik 1995). Recalling the structure given for B-class ECM above (repeated below in (79)), I propose that ellipsis targets the antecedent VP and not the antecedent vP. (Since the ellipsis site is *not* interpreted *de se* but strictly, copying v<sub>[SELF]</sub> would fail.)<sup>18</sup>



<sup>18</sup> It may be the case that other more familiar v heads (like Agent) *must* be copied. However, given that the intended reading is reasonably non-preferred in (78) I conclude this type of mismatch is tolerable.



The strict reading, where the trace in Spec,TP is interpreted as “Fred”, applies to the second conjunct without any requirement that the copied material be interpreted *de se*. In sum, ellipsis provides a reason to believe that *de se* interpretations are not rigidly encoded in the LFs of attitude complements. If *de se* is syntactically encoded at all, it is higher in the tree.<sup>19</sup>

## 5. Conclusion and further issues

This paper has provided evidence for a connection between *de se* and inherently reflexive predicates—between *self-action* and *self-belief*. That connection, as well as the central evidence from English B-class ECM constructions, led to an account of *de se* using a notion of Strong Reflexivity. By implementing Strong Reflexivity as a piece of morphology in the matrix verbal projection, *de se* was guaranteed in cases where the syntactic configuration licensed that morphology. Strong Reflexivity furthermore allowed for a way to constrain the meaning of predicates in a deep way, going far beyond standard reflexivity, by requiring identity as a condition of both *self-action* and *self-belief*.

<sup>19</sup> Percus and Sauerland (2003a) argue that quantification by *only* provides evidence for dedicated LFs for *de se* reports (see my examples (12-13) in §1.2), as well as evidence from locality constraints. As to the former, the account proposed here *does* implement *de se* at a level of syntactic representation that is available to quantified subjects. I leave their latter arguments based on very interesting data about locality for future research, noting for now that both *de re* and *de se* interpretations do not appear to obey syntactic movement constraints in the general case (see e.g. Reinhart 1991).

The proposal leads to two areas of further investigation. The first is Strong Reflexivity itself, and its expression in natural language through inherently reflexive predicates and *de se* attitudes. The morpheme *!SELF* was designed to apply to only those predicates that had external arguments, which is consistent with Reinhart and Siloni's (1999) generalization that inherently reflexive predicates can only be predicates that have external arguments. However, these same authors show that inherent reflexivity is not always a syntactically transparent phenomenon. We saw above how it can be constrained in English to apply only to non-coarguments, but indeed some languages show a syntactic dimension to inherent reflexivity (Reinhart and Siloni 1999).

There are also questions about Strong Reflexivity and the morpheme *!SELF* so far unaddressed. What happens if an attitude verb is Strongly Reflexive but no reflexive morpheme is present to license it? So for instance, can (80) still contain *!SELF*? And what would that mean?

(80) Maria believed Fred to be a terrible president.

This is clearly not a *de se* attitude in the sense we have been talking about. And the conditions set up so far do indeed prevent *!SELF* when there is no reflexive to license it. But there are very many kinds of *de se* attitudes, particularly toward times (von Stechow 1994). It is hard to see how Strong Reflexivity can account for these cases. Surely a *de se* belief about times is not a *de re* belief about a particular time with Identity holding between the attitude holder and that time—although a *de se* belief about a time surely does involve some temporal overlap between an attitude holder and a *res* time.

It is possible that we can detect the workings of *de se*, and maybe Strong Reflexivity, even when we are not talking about standard *self*-ascription of properties. Speas (2002) notes a contrast between the ECM and finite complements in (81). Speas speculates that (81a) can report Mary's belief even if she does not have her own reason to believe it, or if it's based on hearsay; in this case it is a *de re* belief since Mary may believe the embedded proposition but, perhaps due to confusion, never say to us: "I believe Iraq has nuclear weapons." (81a) can also be read *de se* according to Speas, in which case Mary believes the proposition based on evidence for which she has direct evidence. The ECM construction in (81b) can only be true if Mary believes the proposition *de se*. The continuations distinguish the two interpretations.

- (81) a. Mary believes that Iraq has nuclear weapons  
       ....although she has never really thought about it.
- b. Mary believes Iraq to have nuclear weapons  
       #...although she has never really thought about it.

The ECM contrast feels intuitively like the standard *de se* requirement we have been investigating. It seems as though Mary's connection with a situation that exemplifies the embedded proposition (Kratzer 1998) in (81b) somehow has to be more *direct* in the ECM case, or at least Mary has to not only have a belief *de re* about such a situation but she has to be in a position to say: "I believe that Iraq has nuclear weapons". But again, this type of *de se*, if that is what we might call it, does not appear to be amenable to Strong Reflexivity, although it does appear sensitive to ECM.

A second set of issues has to do with the status of *de se* in linguistic representations. My thesis is that syntactic contexts that require *de se* should be distinguished structurally from syntactic contexts that admit both *de re* and *de se*. In the latter, *de se* arises through the way in which an Acquaintance Relation is resolved, and so is outside the grammar *per se* (again see Maier 2005a,b and references therein). But it is possible, according to Lewis' thesis (1979) that all attitudes are *de se* in a broad sense—in that they are about the attitude holder *self-locating* in logical space, if not physical space. In that case, *de se* will be much more general than a reflex of Strong Reflexivity. In essence I have modified *de se* belief in the following way. Whereas Chierchia (and, perhaps more fundamentally, Lewis) treated *self-belief* as a primitive, I have decomposed this predicate: as a combination of *de re* belief plus Strong Reflexivity. This position seems to necessitate a view, contra Lewis, that some attitude ascriptions are *not* self-ascriptive; that is, if *!SELF* is a lexical element that need not always apply to verbs of propositional attitudes, we therefore expect that we can have attitudes that are not *self-situating* in the sense of Lewis. But I understand Lewis' claim to be about propositional attitudes in general, not necessarily about attitude reports in natural language. *De se* might be a broader category than Strong Reflexivity would suggest, but how natural language expresses *de se* may not be.

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### Appendix A: Reflexives in W- vs. B- class infinitives

I argued that in B-class infinitives the embedded subject enters a relation with the matrix clause (to license *!SELF* and, possibly, to get case). In W-class infinitives there is no matrix relation, but a reflexive anaphor nevertheless appears in the embedded subject position, contrary to Principle A. Following Reinhart and Reuland 1993 (R&R), the appearance of a reflexive subject in W-class infinitives is a case of logophoricity. These authors further claim that “the use of an explicitly anaphoric subject here is very marginal, anyway, because of the availability if a structure with PRO” (R&R 1993, 712.). Consider the three cases below (R&R’s (112)):

- (1) a. Max<sub>i</sub> would like very much [<sub>CP</sub> for [himself<sub>i</sub> to win]].
- b. \*John<sub>i</sub> would like very much [<sub>CP</sub> for [him<sub>i</sub> to win]].

- c. ?She<sub>i</sub> has recently requested for her<sub>i</sub> to be allowed to attend the meeting.  
(Kayne 1984:43)

R&R (1a) escapes a Condition A violations (of both the standard kind and R&Rs reformulation in terms of predication) because ECM subject of this sort undergo focus raising, and as A-bar elements are not subject to conditions defined over argument positions. If R&R are correct about the logophoricity of (1a), what about (1b)? Why is an anaphor pronoun ruled out? They note, following Kayne (1984), that the facts about condition B-effects are not clear in W-class infinitives. For instance, (1c) allows a co-referent construal much more easily than (b). They argue that the differences between (1b) and (1c) should be attributed to an Avoid Pronoun principle.

I add the following further observations about W-class infinitives. We know that Condition B violations can be avoided with a certain kind of parallel structure (see e.g. Heim 1998). So, for instance, the complex sentence in (2) is possible with something like co-reference as indicated by the indexing:

- (2) *from* Heim (1998)  
(You know what Mary, Sue and John<sub>i</sub> have in common?) Mary admires John<sub>i</sub>,  
Sue admires him<sub>i</sub>, and John<sub>i</sub> admires him<sub>i</sub> too.

I think the same can be said about W-class ECM constructions; in fact, the violations are more acceptable in these contexts, a testament to the fact that Condition B may not apply to W-class ISs at all.

- (3) (You know what Mary, Sue and John<sub>i</sub> have in common?) Mary wants for John<sub>i</sub> to get a haircut, Sue wants for him<sub>i</sub> to get a haircut, and even John<sub>i</sub> wants for him<sub>i</sub> to get a haircut too.

Crucially, however, the same latitude with Condition B violations does not hold in B-class ECM constructions.

- (4) #(You know what Mary, Sue and John<sub>i</sub> have in common?) Mary considers John<sub>i</sub> a complete fool, Sue considers him<sub>i</sub> a complete fool, and even John<sub>i</sub> considers him<sub>i</sub> a complete fool too.

Whatever it is that allows for Condition B to be evaded in these contexts (see Heim 1998 for a proposal), the same is not as easy in B-class complements. If the reflexives in W-class infinitives are logophoric, then it is important to note that logophoricity—often connected to a first-person perspective—does not require *de se* (see Reinhart 1991 on this point).