

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

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Puzzle: *de se* and ECM

- (1) a. The amnesiac believed himself to be a war hero. *De se/*de re*
b. The amnesiac wanted himself to be a war hero. *De se/ de re* (cf. Chierchia 1989)

The obligatory-ness of *de se* in (a) vs. (b) correlates with a robust syntactic distinction in ECM (roughly, subject-to-object raising (a) or not (b))

Claim: attitude verbs in obligatorily *de se* constructions are intensional versions of inherently reflexive predicates (*The Amnesiac washed*): both constrained by (2)

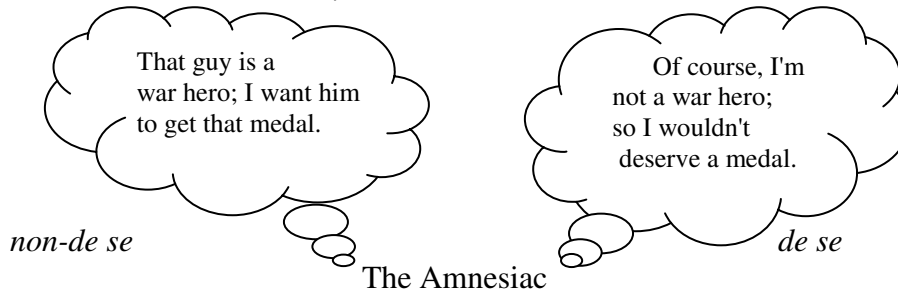
(2) Strong Reflexivity

- a (binary) relation R is Strongly Reflexive iff whenever $\langle a,b \rangle$ is in R, then $a = b$.
cf. a binary relation R is standard/weakly reflexive iff $\langle a,a \rangle$ is in R, for every a in the domain of R.

(2) will deliver *de se* meanings when R is an attitude verb; (1a) is obligatorily Strongly Reflexive due to a Voice head in the matrix clause that the reflexive can and must Agree with (but the reflexive in (1b) does not)

1. *De se* attitudes in finite and non-finite contexts

We are conducting an experiment on an amnesiac patient. We showed The Amnesiac a film of him getting a medal for bravery in war. The Amnesiac doesn't remember getting a medal, nor does he recognize himself in the footage. He is impressed by the guy he sees though, especially because The Amnesiac thinks he himself was never even in the war, and certainly not a brave soldier.



(3) Finite clause complement with pronoun (3a,b) vs. Control (3c)

- a. The amnesiac thought that he was a war hero. *De re*
b. The amnesiac thought the he was not a war hero. *De se*
c. The amnesiac wanted to get a medal *de se/*de re* (false)

Distinguishing *de se* and *de re* to allow (3a) and (3b) be true without ascribing The Amnesiac contradictory beliefs (Castañeda 1966, 1968)

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(4) *The ECM paradigm: W- vs. B-class*

- a. The amnesiac watched himself get a medal in the film footage. (true)
- b. The amnesiac wanted himself to receive a medal. (true) W-class
- c. #The amnesiac believed himself to be a war hero. (false) B-class

- Verifying the intuitions; factor out perspectival variation to give *de re* the best chance

(5) *The experimenters' final report*

We told The Amnesiac about the experiment afterward. He was baffled that he had watched himself in the film and wanted himself to accept the medal. #He was shocked when we told him that he believed himself to be a war hero.

(6) *The Amnesiac after reading the report (but still disbelieving the whole thing)*

Those psychologists said I watched myself in the film and that I wanted myself to get a medal. #They said I even believed myself a war hero!

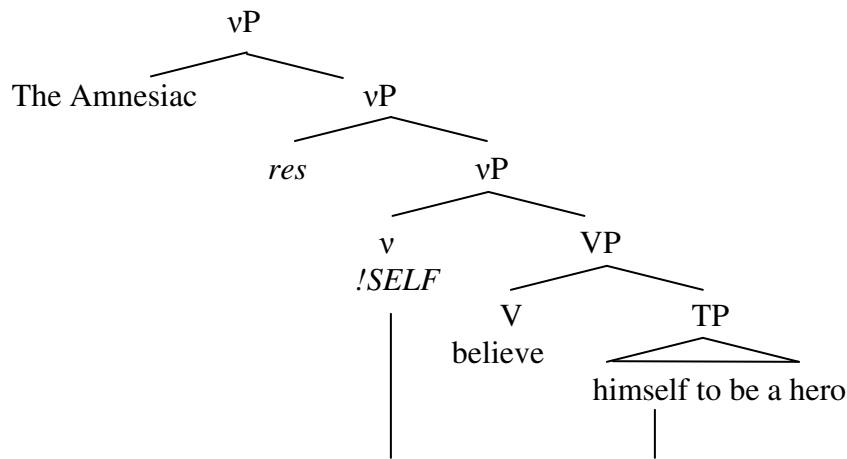
- *only* can bring out *de re* reading (Percus and Sauerland (2003)); (7/8) false if *he* is understood *de se*. **Scenario:** In actual fact, none of the experimenters think The Amnesiac, nor themselves, is or was a war hero. Only The Amnesiac believes this of The Amnesiac, non-*de se*.

(7) Only The Amnesiac thought that he was a war hero. (true)

(8) Only The Amnesiac believed himself to be a war hero. (false)

The proposal in brief: B-class/*de se* ECM

(9)

**(10) The 3 ingredients**

- I. a. Strong Reflexivity A constraint on truth-conditions of predicates requiring necessary identity of arguments in a relation: used for inherently reflexive actions and obligatory *de se* as in B-class ECM (*The Amnesiac = res*)
- b. *!SELF* v / Voice head that selects for an inherently/Strongly reflexive *belief*

II. [semantic] *res* argument (Quine 1956, Lewis 1979)

Attitude verbs are 3 place relations between attitude holder (ext argument), a property (=TP), and a *res* argument. If *The Amnesiac* and *res* are identified in all possible worlds then *The Amnesiac* has a *de se* belief

II. [syntactic] Agree relation between *!SELF* and ‘-self’

!SELF is present if such a relation must hold; B-class ECM/subject-to-object raising requires licensing by matrix predicate, but not in W-class; evidence below

2. The syntactic ingredient: B- and W-class infinitives

(4a-c) generalizes to a syntactic distinction: W- vs. B-class infinitives (Postal 1974, Bach 1977, Lasnik and Saito 1991; Reinhart and Reuland 1994, i.a.)

- | | |
|---|------------------------------|
| (11) <i>B-Class</i> | <i>W-class</i> |
| 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 |
-
- | | |
|--|---|
| (12) <i>B-class</i> | (13) <i>W-class</i> |
| a. *Fred believes the judge to be an activist during the next term. | a. Fred wants the judge to be an activist during the next term. |
| b. *Fred believed to be happy. | b. Fred wanted to be happy. |
| c. Fred was believed to be happy. | c. *Fred was wanted to be happy. |
| d. Fred [_{Agro} himself] _j [_{VP} believed [_{IP} t _j to be happy]]. | d. Fred wanted [_{CP} (for) himself to be happy.] |

W-class predicates: de re/de se (verbs from Pesetsky 1992):

wanted, expected, needed, couldn't stand, would hate, didn't like, preferred,...

- | | |
|--|------------------|
| (14) a. The amnesiac wanted to get the medal. | <i>de se/*re</i> |
| b. The amnesiac wanted (very much for) himself to get the medal. | <i>de se/re</i> |
| (15) a. The amnesiac expected to get the medal. | <i>de se/*re</i> |
| b. The amnesiac expected (very much for) himself to get the medal. | <i>de se/re</i> |
| (16) a. The amnesiac would hate to get the medal. | <i>de se/*re</i> |
| b. The amnesiac would hate (very much for) himself to get the medal. | <i>de se/re</i> |
| (17) a. The amnesiac preferred to get the medal. | <i>de se/*re</i> |
| b. The amnesiac preferred (very much for) himself to get the medal. | <i>de se/re</i> |

B-class predicates: *de re (verbs from Pesetsky 1992):

believed, figured, found, considered, fancied, felt, held, imagined, judged, ...

- | | |
|---|---------------------|
| (18) a. The Amnesiac considered himself (to be) a war hero. | <i>de se/*de re</i> |
| b. The Amnesiac found himself to be a war hero. | <i>de se/*de re</i> |
| c. The Amnesiac felt himself to be a war hero. | <i>de se/*de re</i> |
| d. The Amnesiac judged himself to be a war hero. | <i>de se/*de re</i> |
| e. The Amnesiac saw himself to be/being a war hero. | <i>de se/*de re</i> |
| f. The Amnesiac reckoned himself to be a war hero. | <i>de se/*de re</i> |
| g. The amnesiac knew himself to be a war hero. | <i>de se/*de re</i> |

Tense plus case: (Chomsky and Lasnik (1993), Martin (2001))

B-class [-tense -case]: overt ISs undergo raising to matrix clause;

W-class [+tense +case]: license lexical and PRO subjects

Evidence for movement in B-class: (Lasnik and Saito (1991))(19) *B-class subject high enough to bind into adjunct but not W-class*

- a. ?I believed those men_i to be unreliable because of each other's_i statements.
- b. *??I wanted those men_i to be fired because of each other's_i statements.

(20) *B-class subjects license NPI in adjunct, but W-class subjects do not.*

- a. ?I believed none of the applicants to be qualified after reading any of the reports.
- b. *??I wanted none of the applicants to be hired after reading any of the reports.

Syntactic Ingredient: B-class ECM subjects enter licensing (and movement?) relation with matrix material: extended to reflexive subject licensing *!SELF*

3. The semantic ingredient: De Re belief*de re belief* is a 3-place predicate: attitude holder, *res*, propertyattitude holder ascribes a property *P* to a *res* under a particular description of the *res* which is derived from how attitude holder is “acquainted” with the *res* (Quine 1956).

Acquaintance Relation (AcqR): *the way an attitude holder is perceptually or causally related to the particular object of de re belief—can be acquainted with res in different ways*

- (21) a. $[\text{believe}_{\text{dere}}] = \lambda P.\lambda y.\lambda x.\lambda w.\exists R.[\text{Acqaint}(R) \wedge R(x, y, w) \wedge \forall \langle x', w' \rangle \in \text{Dox}(\langle x, w \rangle): P(\lambda z.R(x', z, w'))(w')]$
 b. given any pair $\langle x', w' \rangle \in \text{Dox}^1(\langle x, w \rangle)$, (20a) is true iff
 i. there is an Acquaintance Relation *R* such that *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'*

AcqR is not specified in semantics: contextually supplied

- (21) $[[\text{The Amnesiac}_1 \text{ believed}_{\text{de re}} \text{ that he}_1 \text{ was a war hero}]]$ is true iff
 $\exists R.[\text{Acqaint}(R) \wedge R(\text{The Amnesiac}, \text{The Amnesiac}, w_0) \wedge \forall \langle x', w' \rangle \in \text{Dox}(\langle \text{The Amnesiac}, w_0 \rangle): [\lambda v.\lambda w.\text{be-a-war-hero}(v, w)](\lambda z.R(x', z, w'))(w')]$

Informally, where *R* = *see-on-the-TV*: *The Amnesiac thinks the guy on TV is a hero***De se, according to Lewis (1979)**

“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)

- A reductionist view of *de se* (see Maier 2004a,b, a recent proponent)
- *De se* report is semantically identical to *de re*, but context sets AcqR = Identity
- *The Amnesiac ascribes the Property of not being in a hero to the individual whom his doxastic counterpart bears the relation of identity to (in belief alternatives).*²

¹ *Dox* function takes attitude holder and evaluation world and returns the pair $\langle x', w' \rangle$ where *w'* is a world compatible with *x*'s beliefs in *w*, and *x'* is the individual who *x* identifies as himself in *w'*.

² Lewis (1979) goes further: *de re* is self-ascription of the property of bearing an AcqR. See Heim (1998) and Percus and Sauerland (2003a,b) for an implementation; this won't affect the arguments to follow.

Semantic Ingredient

De se belief is *de re* belief with Identity as the acquaintance relation³

4. The problem of obligatory *de se* reports

The reductionist view will not let us make a semantic/truth-conditional distinction between *de se/de re*, and *a fortiori* a syntactic one

Chierchia's 1989 solution: properties

de se is self-ascription of properties; Property derived in object language with optional abstraction (or the pronoun or PRO acts like an abstractor, (Percus and Sauerland (2003a,b))

- (22) a. The Amnesiac believes that he not a war hero. *De se belief*
 = The Amnesiac self-ascribes [$\lambda x. x$ a war hero]

But! optional abstraction at the embedded clause will not distinguish B- and W-class infinitives;
 Does not tie the difference to the syntactic distinctions (movement to matrix clause in B-class);

4.1 De Se = Strong Reflexivity + De Re

de se cannot be simply result from the reflex. subj in B-class being bound in matrix clause (23b) is equivalent to (24b), and both are *de re*: *The Amnesiac believes P of The Amnesiac*

- (23) a. The Amnesiac believes that he is a hero. *de re attitude*
 b. The Amnesiac λx [x believes that x is a hero]
 (24) a. The Amnesiac believes himself not to be a hero *de se attitude*
 b. The Amnesiac λx [x believes x not to be a hero]

- (25) **Solution: Strong Reflexivity**⁴ (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 $a = b$.

the binary relation will be the relation between The Amnesiac and the res

4.2 Diversion: Inherent reflexivity

Natural language has relations that are constrained so that they only have pairs like $\langle a, a \rangle$ in them: Inherently reflexive predicates (cf. Brown on *de se* connection)

Dutch (Reinhart and Reuland 1994)

- *zichzelf* in (26a): other-action performed on the *self*
- *SE* anaphor *zich* in (26b): *self-action* expected meaning where he pulls himself out of the swamp in the way only one can do oneself

³ Cf. work on indexical shifting where *de se* manipulates contextual coordinates in complement clauses (Anand and Nevins, and see, of course, Schlenker 1999)

⁴ I owe the term to A. Kratzer, and much help in trying to formulate it to R. Bhatt and A. Kratzer.

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

English No morphological difference, less systemic but same effect on interpretation:

- (27) a. The man moved himself across the room. *other action directed toward the self*
 b. The man moved across the room. *Self-action*

- (27a): *move* is a transitive relation (*move*₂); has been ‘reflexivized’ in the familiar way: true just in case the pair ⟨the man, the man⟩ is in the Relation *move*₂.
- (27b): intransitive is inherently reflexive (*move*₁).
- not the same reflexive operation: not just an other-action directed at the self.

4.3 An overt correlation with Swedish ‘sig’: inherent and *de se* reflexives

Swedish ECM constructions only tolerate Strong Reflexivity between the matrix subject and the embedded subject; only Simplex reflexive (Lundin 2003); attitude report ECM must be interpreted *de se* (p.c. Katrina Lundin):⁵

- (28) a. Han onskar [sig/*sig sjalv/*Kalle] kunna springa 50 kilometer.
 He wishes RELF/himself/Kalle to-able-to run 50 kilometers.
 ‘Hans wishes to be able to run 50 kilometers’

the inherently reflexive predicates allow only ‘sig’

- (29) a. Kalle vande [sig/*sig sjalv/*Hans] om
 Kalle turned REFL/herself/Hans around
 ‘Kalle turned/herself/Hans around’

correlation between inherently reflexive verbs and *de se* ECM because they are Strongly Reflexive relations: self-ascribing, self-action.

5. Strong Reflexivity

Claim 1: natural language verbal roots can come in two forms, one with the property of Strong Reflexivity, the other without it

Semantic types: *e* individuals, *s* event(ualities), *i* possible worlds, *t* truth values {1,0}

Variables: *w* ranges over worlds, *e* over eventualities, *x* over (ordinary) individuals

(30) Self-action (aka Inherent Reflexives, Strongly Reflexive verbs):

An action verb *R* is self-action relation iff it is Strongly Reflexive

(31) Strong Reflexivity

A relation *R* of type $\langle e \langle s \langle i, t \rangle \rangle \rangle$ is Strongly Reflexive iff in all possible worlds *w*, whenever *R* is true of a tripel $\langle x, e, w \rangle$, then the Agent of *e* in *w* is identical to *x*.

⁵ Swedish has ECM with infinitives with *att* ‘to’ that allow lexical subjects (Johnson and Vikner 1998)

- (38) The Amnesiac (=A) believes himself to be war. *De se/*de re*
 [A] !SELF-believes *de re* of [A] the property [to-be-a-war-hero], iff

$$\forall \langle z', w' \rangle \in \text{Dox}(\langle A, w \rangle)$$

- (i) there is an AcqR s.t. A uniquely bears R to A in w
- (ii) the unique individual that z' bears R to in w' is in danger in w'
- (iii) $\forall w''$ [believes(A, A, to-be-a-hero, w'') \rightarrow A = A in w'']

- sub-condition (iii) expresses the Strong Reflexivity requirement: in all possible worlds—incl. The Amnesiac's doxastic alternatives—the holder of the belief state must be identical to the *res*
- If some other AcqR is chosen, then The Amnesiac would not be identical to the individuals in his doxastic worlds which he ascribe the property of being-in-danger to

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.


5.3 Putting the pieces together: $v_{[!SELF]}$, B-class, and syntactic licensing

$v_{[!SELF]}$: interpretable features [F], which is obvious given its denotation.

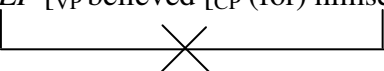
(may also need licensing by overt morphology if it is to be present in the syntax)
 –*self* portion of English reflexives has the following two properties: it has uninterpretable features [uF] that must be valued by a semantically contentful element, and these features match with covert $v_{[!SELF]}$.

(39)

B-class [v_{DP} !SELF [v_P believed [TP him-self to be a war hero]]]



W-class [v_{DP} !SELF [v_P believed [CP (for) himself_i [TP t_i to be a war hero]]]]]



- If –*self* didn't raise in B-class then it violation of Principle A, and moreover the semantic contribution of !SELF would not be ensured.
- Contrary to Reinhart and Reuland (1994) ECM verbs with reflexive subjects are semantically reflexive, just indirectly (between subject and *res*)

6. Conclusion and further issues

1. when *De se* is obligatorily (e.g B-class ECM) it is so just like inherent reflexives: strongly reflexive relations (via !SELF)
2. Whereas Chierchia treated *self-belief* as a primitive, I have decomposed this predicate: as a combination of *de re* belief plus Strong Reflexivity/ !SELF.
3. *de se* does have a syntactic life, but only inasmuch as Strong Reflexivity selected by !SELF does
4. control? (is !SELF built into the attitude verb, or does PRO license !SELF?)

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