

Two notions of *de se* in desire reports¹

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Abstract. I argue that *de se*-interpretations of infinitival complements in attitude reports may involve different notions of *de se* depending on the type of attitude predicate: **ascriptive *de se*** or **evaluative *de se***. While in the case of ascriptive *de se*, the infinitival denotation is predicated to be true of every centered world in a set of Hintikka-alternatives, in the case of evaluative *de se* the infinitival denotation is used to characterize a set of centered worlds of which desirability above a certain threshold is predicated. The standard explanation for the *de se*-constraint on PRO does not carry over to the case of evaluative *de se*. The grammar of *de se* has a second source: ***de se* measure functions**.

Keywords: desire reports, *de se*, self-ascription, conditionals, gradability

1. Introduction

1.1. An example from Lakoff (1970)

Let's start with the following example from Lakoff (1970: p. 247):

- (1) I wanted to be president, but I didn't want myself to be president. Lakoff (1970)

The interesting thing about this example is that the right conjunct seems to express that the speaker had the wish that *she (herself)* would become president, while the right conjunct seems to express that she had the wish that *she (herself)* would not become president (assuming neg-raising). So it seems that the speaker in uttering (1) expresses something contradictory. But, as Lakoff comments on this example:²

[(1)] is not contradictory. I may want to be president because I am power-hungry, while not wanting myself to be president because I am lazy and corrupt, and it would be bad for the country.

This example is one of many that Lakoff uses to argue that attitude reports can involve different counterpart relations.³ For *want* with an infinitival complement, as in (2a), he assumes that it involves a “**participant-counterpart relation**”; for the ECM-construction hosting a reflexive pronoun in subject position, as in (2b), he assumes a “**observer-counterpart relation**”.

- (2) a. I wanted to be president. (participant) Lakoff (1970)
b. I wanted myself to be president. (observer)

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²The elucidating discussion of Lakoff's example in Pearson and Roeper (2021) was an inspiration for this paper.

³Lakoff refers to Lewis' work but doesn't use the term “counterpart” in the technical sense of Lewis.

1.2. Other cases of the participant-observer distinction

For Lakoff, the participant-observer distinction that we find with different complement types of *want* is a special case of a more general phenomenon that we also find with other attitude predicates like *enjoy*, *imagine* or *dream*:

- (3) a. I enjoyed playing the piano. (participant) Lakoff (1970)
b. I enjoyed my playing the piano. (observer)

Similar contrasts have been discussed in more recent years in the semantic literature on dream, imagining and experience reports; Ninan (2008); Pearson (2018); Liefke and Werning (2021) a.o.

- (4) a. Bernie imagined skiing down a steep hill. (participant) Ninan (2008)
b. Bernie imagined that he was skiing down a steep hill. (participant / observer)

1.3. Two differences to the other examples

There are two differences that distinguish the *want*-pair from other pairs discussed in Lakoff (1970). First, while dreaming, imagining or experiencing to “participate” in an action has an **experiential** (‘how it is like’) quality which is reflected in the semantics of the corresponding attitude reports, see for example Ninan (2008); Pearson (2013); Liefke and Werning (2021) a.o.: wish reports with infinitivals don’t necessarily involve an experiential quality. For example, while (5a) seems to presuppose that the speaker has some experience of being remembered, a speaker can truthfully utter (5b) without ever being in a position to have a corresponding experience.

- (5) a. I enjoy being remembered.
b. I want to be remembered.

Second, while we can think of the examples in (3) as involving different **modes of self-representation**, on some conceptual level the involved notions of *de se* are the same. Both are cases of “**ascriptive *de se***”, as I will call it. This is different with the pair in (2): If the example in (2a) involves a notion of *de se*, it is ascriptive *de se*, as I will argue. The example in (2b), on the other hand, involves a different notion of *de se* which I will call “**evaluative *de se***”. That is, I argue that what is going on in Lakoff’s *want*-example is different from what is going on in his other examples: The difference between (2a) and (2b) cannot be reduced to different modes of self-presentation against the background of a single notion of ascriptive *de se*.

- (6) a. I wanted PRO to be president. (evaluative *de se*)
b. I wanted myself to be president. (ascriptive *de se*)

1.4. Two notions of *de se*

The main goal of this paper is not in the first place to give a full analysis of Lakoff's example but to point out the conceptual difference between ascriptive and evaluative *de se*. I take Lakoff's example to be well suited to illustrate the difference between the two notions.

The basic idea in the background that motivates this paper is the following: It is widely assumed in the literature that desire reports cannot adequately be modelled with a Hintikka-semantics. All the arguments should carry over to desire reports with infinitival complements since the overall conceptual structure should be the same. The infinitival case typically is assumed to involve a notion of *de se*. In fact, one of the pioneering papers on *de se* attitudes in linguistics, namely Chierchia (1989), uses the *want*-infinitival construction as a point of departure. But as far as I know, it hasn't been discussed yet in the literature how *de se* looks like on accounts that try to avoid the problems of the Hintikka-semantics for desire reports. In fact, I won't do much more in this paper than to spell out how it looks like.

I will mainly refer to Heim (1992)'s semantics of desire reports as an alternative to Hintikka's semantics. To give a first idea what the difference between ascriptive and evaluative *de se* comes down to: Ascriptive *de se* is infinitival-*de se* on a Hintikka-semantics; evaluative *de se* is infinitival-*de se* on a Heim-semantics. And in the same way as Heim's semantics for desire reports can not be reduced to a Hintikka-semantics, evaluative *de se* cannot be reduced to ascriptive *de se*.

Since virtually all accounts of attitudinal *de se* assume a Hintikka-semantics, i.e., ascriptive *de se* (including discussions of different routes to *de se*, e.g., Reinhart (1990); Maier (2011); Pearson (2018), and multi-layered accounts of counterfactual attitudes, e.g., Anand (2007); Ninan (2008); Yanovich (2011)), this insight has consequences for our understanding of the grammar of *de se*, as I will argue.

1.5. Plan for the paper

I start with a quick reminder of some of the details of Heim's semantics for desire reports. Then, I shortly discuss the ECM-construction in Lakoff's example. In section 4, I spell out the details of how a semantics for the *want*-infinitival construction looks like if we extend Heim's semantics to the infinitival case. Following a short iterim summary, I take a step back in section 6 and discuss some of the short-comings of a Hintikka-semantics for desire reports and what has been suggested in the literature as an alternative. In section 7, I discuss what I take to be the core structure of desire reports of the alternative accounts to a Hintikka-semantics. This allows me to address the conceptual differences between a Hintikka-semantics and its alternatives and in turn the notional difference between ascriptive and evaluative *de se*. In section 9, I discuss the consequences for the grammar of *de se*. In section 10, I briefly discuss infinitivals with other desire predicates.

2. Background: Heim's semantics for desire reports

Throughout this paper, I will use Heim (1992)'s semantics of desire reports for illustration. The main point of this paper is independent of this choice. It carries over to all accounts that assume that the object denoted by the complement is mapped to a degree on a scale above a certain threshold. I will come back to this point in section 7. I assume that the reader is familiar with the formal details of Heim's account. To give just a quick reminder. Heim assumes that there is "a hidden conditional in every desire report" – an idea she attributes to Stalnaker (1984).

“The analysis of desire verbs I want to pursue here is sketched in Stalnaker (1984: 89): ‘wanting something is preferring it to certain relevant alternatives, the relevant alternatives being those possibilities that the agent believes will be realized if he does not get what he wants.’ An important feature of this analysis is that it sees a hidden conditional in every desire report. A little more explicitly, the leading intuition is that *John wants you to leave* means that John thinks that if you leave he will be in a more desirable world than if you don’t leave.” Heim (1992: p. 193)

For sentences with *want* she assumes the following truth conditions:⁴

- (7) $w \in \llbracket \alpha \text{ wants } \varphi \rrbracket$ iff for every $w' \in \text{Dox}_\alpha(w)$,
 $\text{Sim}_{w'}(\llbracket \varphi \rrbracket) <_{\alpha, w} \text{Sim}_{w'}(W \setminus \llbracket \varphi \rrbracket)$ (Heim, 1992: p. 197)

3. Remarks on the ECM-construction with reference to oneself

The main claim of this section is that if the pronoun *myself* in Lakoff’s example has a *de se* interpretation, it is parasitic on an underlying layer of belief – similar to other cases of belief-parasitism discussed in the literature, e.g., Maier (2015); Blumberg (2018). Since, as I will argue in detail later, the notion of *de se* related to belief-attributions is ascriptive *de se*, it follows that if the ECM-construction involves a notion of *de se*, it is ascriptive *de se*.

I think there are two ways how one could think of the interpretation of *myself* in the ECM-construction of Lakoff’s example. *Myself* could be interpreted *de re* with respect to the actual world, to which I want to refer simply as “actual *de re*”; or it could be interpreted *de re* with respect to the beliefs of the attitude holder or what Yanovich (2011) calls “*de credito*”. The difference may come out more clearly if we switch to the third person. Intuitively, the difference can be paraphrased as follows:

- (8) Mary doesn’t want herself to be president.
 (9) a. Actual *de re*: Mary doesn’t want (someone like) *the person she actually is* to be president.
 b. *De credito*: Mary doesn’t want (someone like) *the person she believes herself to be* to be president.

I take it that Lakoff’s puzzle would be resolved with any of these two interpretations for the ECM-construction. In the context of this paper, only the *de credito*-interpretation is of interest since there is no reason to assume that the actual *de re*-reading involves a notion of *de se*.

Since on the Heimian account, *myself* is interpreted in the modal environment of the antecedent of a “hidden” conditional the relevant notion of *de re* modal *de re* and not attitudinal *de re*, despite the fact that the conditional antecedent is anchored to the belief-worlds of the attitude

⁴Many examples discussed in Heim (1992) involve ECM-constructions. If we wanted to be more explicit about the compositional interpretation, we could assume:

(i) $\llbracket \alpha \text{ wants } \beta \text{ to VP} \rrbracket(w) = 1$ iff for every $w' \in \text{Dox}_\alpha(w)$,
 $\text{Sim}_{w'}(\{w'' : \llbracket \text{VP} \rrbracket(w'')(\llbracket \beta \rrbracket(w''))\}) <_{\alpha, w} \text{Sim}_{w'}(W \setminus \{w'' : \llbracket \text{VP} \rrbracket(w'')(\llbracket \beta \rrbracket(w''))\})$

holder.⁵ One way to model modal *de re* is via counterparts in the Lewisian' technical sense of "counterpart".

In the context of this paper, I will render this technical notion as follows: An individual y in a world w' is the counterpart of an individual x in a world w iff y is the most salient individual that shares at least as many properties with x in w as any other individual in w' .

Against this background, the difference between actual *de re* and *de credito* can be traced back to whether the shared properties are properties the individual *actually* has or properties that the individual *believes to have*, or (doxastically) self-ascribes.

Formally, this can be modelled as follows:

- (10) LFs for a sentence of the form: α_i wants *pro_i-self* to VP
- a. Actual *de re*: $\lambda w_0 [\alpha_i \textbf{wants} \lambda w_1 [[\textbf{pro}_i \textit{actual-SELF}_{w_0, w_1}] \textbf{to VP}_{w_2}]]$
 - b. *De credito*: $\lambda w_0 [\alpha_i \textbf{wants} \lambda w_1 [[\textbf{pro}_i \textit{belief-SELF}_{w_0, w_1}] \textbf{to VP}_{w_2}]]$
- (11) a. $\llbracket \textit{actual-SELF} \rrbracket(w)(w')(\alpha) = \iota x \in D_e: \forall y \in D_e: \langle w', x \rangle \leq_Q \langle w', y \rangle,$
where $Q = \{P \in D_{\langle s, \langle e, t \rangle \rangle}: P(w)(\alpha)\}$
- b. $\llbracket \textit{belief-SELF} \rrbracket(w)(w')(\alpha) = \iota x \in D_e: \forall y \in D_e: \langle w', x \rangle \leq_Q \langle w', y \rangle,$
where $Q = \{P \in D_{\langle s, \langle e, t \rangle \rangle}: \text{Dox}_\alpha^{\text{SE}}(w) \subseteq P\}$
- (12) a. $\langle w, x \rangle \leq_Q \langle w', y \rangle$ iff $\{P \in Q: P(w')(y)\} \subseteq \{P \in Q: P(w)(x)\}$
- b. $\text{Dox}_\alpha^{\text{SE}}(w) = \{\langle w', y \rangle: \langle w', y \rangle \text{ is a doxastic alternative for } \langle w, \alpha \rangle \text{ of } \alpha \text{ in } w\}$

I will stay agnostic about whether what surfaces as *self* is a spell out of the LF-operator SELF. Nothing hinges on the details of the formal implementation proposed here. The claims connected to the main topic of this paper are: (a) I assume that the ECM-construction can have a *de credito*-interpretation that can be paraphrased as 'I didn't want the person I believed myself to be to be president'. (b) The *de credito*-interpretation is parasitic on a layer of beliefs. The notion of *de se* related to this layer is ascriptive *de se* – which at this point still needs to be defined.

4. A semantics for *want* + infinitival

In a nutshell, the proposal for the *want*-infinitival construction is to extend Heim's semantics to the *de se*-case in the same way as Hintikka's semantics has been extended to the *de se*-case: by substituting centered possible worlds for simple possible worlds. I assume that a sentence of the form in (13a) has the underlying LF in (13b). That is, an infinitival in an intensional context denotes a property of centered worlds. I take this to be a standard assumption. It is the same as on a Hintikka-semantics; see also section 6.

- (13) a. α wants to VP.
- b. $\lambda w_0 [\alpha \textbf{wants}_{w_0}^{\text{SE}} [\lambda w_1 \lambda x_2 [\textbf{PRO}_2 \textbf{to VP}_{w_1}]]]$

For the semantics of $\textbf{want}_{w_0}^{\text{SE}}$, we can start by substituting centered worlds for simple worlds in the main predication at the core of Heim's semantics. Instead of

⁵See (Lewis, 1986: p. 33) for a discussion of the difference between modal and attitudinal *de re*.

$$w' <_{\alpha, w} w''$$

iff w' is more desirable to α in w than w''
cf. (Heim, 1992: p. 197)

we get:

$$\langle w', x' \rangle <_{\alpha, w}^{\text{SE}} \langle w'', x'' \rangle$$

iff $\langle w', x' \rangle$ is more desirable^{SE} to α in w than $\langle w'', x'' \rangle$

The relation $<_{x, w}^{\text{SE}}$ orders centered possible worlds according to how desirable it would be for α in w to be the corresponding individual in the corresponding world.⁶

Given the shift from simple worlds to centered possible worlds, the Sim-function has to be adjusted accordingly to Sim^{SE}.

- (14) $\text{Sim}_w(p) =_{\text{def}} \{w' \in W : w' \in p \text{ and } w' \text{ resembles } w \text{ no less than any other world in } p\}$
(Heim, 1992: ex. (38))
- (15) $\text{Sim}_{\langle x, w \rangle}^{\text{SE}}(P) =_{\text{def}} \{\langle w', x' \rangle : \langle w', x' \rangle \in P \text{ and } \langle w', x' \rangle \text{ resembles } \langle w, x \rangle \text{ no less than any other world-individual-pair in } P\}$

The details for *want* with an infinitival complement and the schematic truth conditions for the sentence corresponding to the first conjunct of Lakoff's example are as follows:

- (16) $\llbracket \mathbf{want}^{\text{SE}} \rrbracket = \lambda w. \lambda P_{\text{set}}. \lambda x. \text{ for every } \langle w', x' \rangle \in \text{Dox}_x^{\text{SE}}(w),$
 $\text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(P) <_{x, w}^{\text{SE}} \text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(W \times D \setminus P)$
- (17) $\lambda w_0 [\alpha \mathbf{wants}_{w_0}^{\text{SE}} [\lambda w_1 \lambda x_2 [\text{PRO}_2 \text{ to VP}_{w_1}]]]$
- (18) $\llbracket (20b) \rrbracket = \lambda w. \text{ for every } \langle w', x' \rangle \in \text{Dox}_\alpha^{\text{SE}}(w),$
 $\text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(\{ \langle w'', x'' \rangle : \llbracket \text{VP} \rrbracket(w'')(x'') \}) <_{\alpha, w}^{\text{SE}}$
 $\text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(W \times D \setminus \{ \langle w'', x'' \rangle : \llbracket \text{VP} \rrbracket(w'')(x'') \})$

5. Interim summary

We can now compare:

- (19) a. $\alpha_i \text{ wants } \text{pro}_i\text{-self to VP.}$
b. *De credito*: $\lambda w_0 [\alpha_i \mathbf{wants} \lambda w_1 [[\mathbf{pro}_i \text{ belief-SELF}_{w_0, w_1}] \text{ to VP}_{w_2}]]$
c. $\llbracket (19b) \rrbracket^g = \lambda w. \text{ for every } w' \in \text{Dox}_\alpha(w),$
 $\text{Sim}_{w'}(\{ w'' : \llbracket \text{VP} \rrbracket(w'')(\text{CP}_{w'', Q}) \}) <_{\alpha, w}$
 $\text{Sim}_{w'}(W \setminus \{ w'' : \llbracket \text{VP} \rrbracket(w'')(\text{CP}_{w'', Q}) \}),$
where $\text{CP}_{w'', Q} = \iota x \in D_e : \forall y \in D_e : \langle w'', x \rangle \leq_Q \langle w'', y \rangle$
and $Q = \{ P \in D_{\langle s, \langle e, t \rangle \rangle} : \text{Dox}_\alpha^{\text{SE}}(w) \subseteq P \}$

⁶Some discussion on ordered centered worlds can be found in Graeves and Lederman (2016).

- (20) a. α wants to VP.
 b. $\lambda w_0 [\alpha \text{ wants}_{w_0}^{\text{SE}} [\lambda w_1 \lambda x_2 [\text{PRO}_2 \text{ to VP}_{w_1}]]]$
 c. $\llbracket (20b) \rrbracket^g = \lambda w. \text{ for every } \langle w', x' \rangle \in \text{Dox}_{\alpha}^{\text{SE}}(w),$
 $\text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(\{ \langle w'', x'' \rangle : \llbracket \text{VP} \rrbracket(w'')(x'') \}) <_{\alpha, w}^{\text{SE}}$
 $\text{Sim}_{\langle w', x' \rangle}^{\text{SE}}(W \times D \setminus \{ \langle w'', x'' \rangle : \llbracket \text{VP} \rrbracket(w'')(x'') \})$

On the ECM-construction, assuming a *de credito*-interpretation, the *de se*-interpretation is restricted to the belief-layer, while the main predication is about the world and not the self. In the infinitival-construction the *de se*-interpretation reaches all the way down to the relation between centered worlds at the core.

6. What's wrong with a Hintikka-semantics for desire reports?

Before coming back to the notional difference between ascriptive and evaluative *de se*, let me step back for a moment and focus on two inadequacies of a Hintikka-semantics for desire reports.

6.1. Hintikka-semantics

Let's start with a standard Hintikka-semantics for belief reports, as it can be assumed for example for *glauben* ('believe') with infinitival complements in German:

- (21) $\text{Dox}_{\alpha}^{\text{SE}}(w) = \{ \langle w', y \rangle : \langle w', y \rangle \text{ is a doxastic alternative for } \langle w, \alpha \rangle \text{ of } \alpha \text{ in } w \}$
- (22) a. Lakoff glaubt Präsident zu sein.
 Lakoff believes president to be
 'Lakoff believes that he is president.'
 b. $\lambda w_0 [\alpha \text{ glaubt}_{w_0} \lambda w_1 \lambda x_2 [\text{PRO}_2 \text{ zu VP}_{w_1}]]$
 c. $\llbracket (22b) \rrbracket^w = 1$ iff for every $\langle w', x' \rangle \in \text{Dox}_{\alpha}^{\text{SE}}(w), \llbracket \text{VP} \rrbracket(w')(x') = 1$

I follow (Zimmermann, 2012: p. 2385) in calling the set of doxastic Hintikka-alternatives $\text{Dox}_{\alpha}(w)$ the "doxastic perspective" of α in w . The set of doxastic *de se*-alternatives $\text{Dox}_{\alpha}^{\text{SE}}(w)$ on a Hintikka-semantics I want to call the "doxastic *de se*-perspective" of α in w .

Of course, we can write up something similar for *want* with an infinitival complement:

- (23) $\text{Bou}_{\alpha}^{\text{SE}}(w) = \{ \langle w', y \rangle : \langle w', y \rangle \text{ is a bouletic alternative for } \langle w, \alpha \rangle \text{ of } \alpha \text{ in } w \}$
- (24) a. Lakoff wants to be president.
 b. $\lambda w_0 [\alpha \text{ wants}_{w_0} \lambda w_1 \lambda x_2 [\text{PRO}_2 \text{ to VP}_{w_1}]]$
 c. $\llbracket (24b) \rrbracket^w = 1$ iff for every $\langle w', x' \rangle \in \text{Bou}_{\alpha}^{\text{SE}}(w), \llbracket \text{VP} \rrbracket(w')(x') = 1$

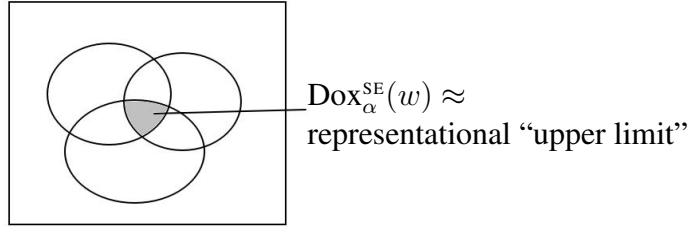
Extending the use of "perspective" to desire reports, we can call $\text{Bou}_{\alpha}^{\text{SE}}(w)$ the "bouletic *de se*-perspective" of α in w . The question is: Does this make sense?

6.2. Self-ascription and upper limits

There is a way to arrive at the same semantics in a slightly different way that already points towards what is problematic with extending a Hintikka-semantics to desire reports. Let's start by defining $f_{\text{Dox}_\alpha^{\text{SE}}(w)}$ as the set of all the properties that α (doxastically) self-ascribes in w , as in (25a). The doxastic *de se*-perspective of α in w could then be defined as in (25b).

- (25) a. $f_{\text{Dox}_\alpha^{\text{SE}}(w)} = \{P \in D_{\langle s, \langle e, t \rangle \rangle} : \alpha \text{ self-ascribes}_{\text{doxastically}} P \text{ in } w\}$
 b. $\text{Dox}_\alpha^{\text{SE}}(w) = \bigcap f_{\text{Dox}_\alpha^{\text{SE}}(w)}$

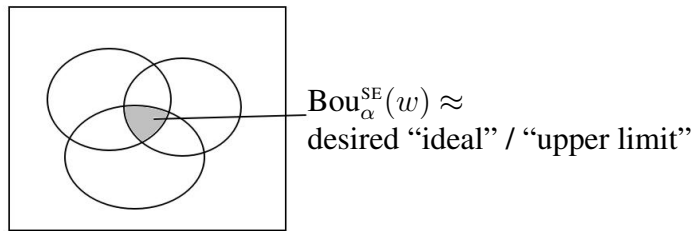
If we restate the semantics like this, we can think of the doxastic *de se*-perspective as representing an ideal or a kind of representational upper limit: The set of doxastic *de se*-alternatives is the set of centered worlds that is compatible with everything that α doxastically self-ascribes in w . We could also call this the “doxastic self-representation of α in w ”.



In a belief report on a Hintikka-semantics, the property denoted by the complement is used to characterize this representational “upper limit”. It is predicated to be true of all the centered worlds that are “ideal” given the order relation $\leq_{f_{\text{Dox}_\alpha^{\text{SE}}(w)}}$.⁷

We could do the same for desire reports. The set $f_{\text{Bou}_\alpha^{\text{SE}}(w)}$ could be defined as the set of properties that α in w bouletically self-ascribes. The set of bouletic *de se*-alternatives is the set of centered worlds that is compatible with everything that α bouletically self-ascribes in w .

- (26) a. $f_{\text{Bou}_\alpha^{\text{SE}}(w)} = \{P \in W \times D : \alpha \text{ self-ascribes}_{\text{bouletically}} P \text{ in } w\}$
 b. $\text{Bou}_\alpha^{\text{SE}}(w) = \bigcap f_{\text{Bou}_\alpha^{\text{SE}}(w)}$



The property denoted by the complement is used to characterize the desired “ideal” or desired “upper limit”. It is predicated to be true of all the centered worlds that are “ideal” given the order relation $\leq_{f_{\text{Bou}_\alpha^{\text{SE}}(w)}}$.⁸

⁷Compare the definition in (12a).

⁸Against the background of this rephrasing, the semantics for *want* proposed in von Fintel (1999), if extended to the *de se*-case, despite not being a Hintikka-semantics in the narrow sense could be taken to fall under this characterization since “[t]he attitude predicate makes a claim about those worlds in the modal base that maximally satisfy the preferences given by the ordering source”, where the ordering source is “a set of propositions forming the subject’s preferences”.

6.3. Two differences between representational attitudes and desires

Against the background of this restatement, it may be more easy to see what is problematic. In particular, I want to discuss two reasons why desire reports shouldn't be modelled with a Hintikka-semantics. The first, I want to call *Lewis' point*: Desire orderings on possible worlds don't guarantee that we will end up with a set of Hintikka alternatives or a set of worlds corresponding to an ideal. The second, I want to call *Heim's point*: Desire reports don't report what individuals want *the most*. The points are not completely unrelated. In fact, one may see them as two aspects of the same thing.

Lewis' point. Lewis (1973) (indirectly) points out a principled problem for a Hintikka-semantics of desire reports:

“We might have an infinite ascent to better and better worlds, and *no innermost sphere containing best worlds of all* [my emphasis; FS]. For every world, there would be a sphere small enough to exclude it, so the intersection of all nonempty spheres would be empty. ” (Lewis, 1973: p. 98)

Against the background of the discussion in the last subsection, we can restate this as follows: There is no guarantee that we will end up with a set of ideal worlds in the case of comparative goodness. Applied to desire reports: There is not always a bouletic *de se*-perspectives. So if Lewis is right, the truth conditions of desire reports cannot be stated in the frame of a Hintikka-semantics for the general case since there is not always a corresponding Hintikka-perspective.

We can still think of (hypothetical or counterfactual) self-ascription as playing a role in determining the order on centered worlds. Intuitively, the order would be determined by questions like “How would you like it to be $\langle w', x' \rangle$? More or less or equal than to be $\langle w'', x'' \rangle$?” based on assumptions about what properties one would have under these circumstances. So on some underlying level, we don't get rid of self-ascription. But crucially: Although self-ascription plays a role in determining the relevant order in desire reports, it doesn't necessarily determine an ideal. Or put differently: In the conceptual structure of desire reports properties are not self-ascribed *simpliciter* – as it seems to be the case in the conceptual structure of representational attitudes – but *for the purpose of comparison*.

Heim's point. As Heim points out, when we report a desire, we usually don't talk about what the attitude holder wants the most. In some sense, desire reports seem to only make comparative claims. This can be illustrated by the following example that is due to Heim (1992): Eventhough one may truly say of me that I want to teach Tuesdays and Thursdays next semester (given that I believe I will have to teach next semester), there may be circumstances that I desire even more in which I don't teach at all, for example because I was awarded a life-time research grant under these circumstances. But given that I have to teach, I prefer to teach on Tuesdays and Thursdays over teaching on other days of the week.

Heim proposes to model this by assuming that in the truth conditions of a desire report of the form α wants φ , most similar φ -worlds to a world w' are pairwise compared with most similar non- φ -worlds to the same world w' , for every doxastic alternative w' of the attitude holder in the world of evaluation.

$$(27) \quad w \in \|\alpha \text{ wants } \varphi\| \text{ iff for every } w' \in \text{Dox}_\alpha(w), \\ \text{Sim}_{w'}(\|\varphi\|) <_{\alpha, w} \text{Sim}_{w'}(W \setminus \|\varphi\|) \quad (\text{repeated from (7)})$$

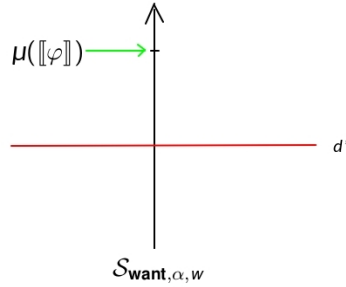
In particular, this allows for there to be non- φ -worlds that are more desirable to α in w than any φ -world closest to any world of α 's doxastic alternatives in w .

7. The core structure of desire reports

The many details of Heim's proposal may one let lose sight of its core structure. Conceptually, we can separate what is idiosyncratic to Heim's account from what is a shared assumption on all accounts that consider the gradable nature of desire predicates.

Abstractly speaking, desire reports of the form α *wants* φ involve a measure function μ that maps the complement proposition on a desirability scale $\mathcal{S}_{\text{want},\alpha,w}$ while stating the the value we get when we apply μ to the complement proposition φ is above a certain threshold d^* , as illustrated in (28). That is, the value we get by applying μ to the complement proposition φ is predicated to be on the upper end of a desirability scale where the upper end is determined by the threshold d^* . This is what I want to refer to under the name “**desirability predication**”.

(28)



$\mu(\llbracket\varphi\rrbracket)$ is a value on the upper end of $\mathcal{S}_{\text{want},\alpha,w}$
above the threshold value d^*

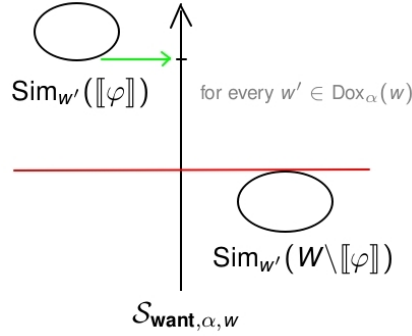
This assumption is shared with other accounts that address the gradability of *want* e.g., Levinson (2003); Villalta (2008); Lassiter (2011).⁹

It may not be obvious in what sense Heim's proposal conforms to this general structure. It will become more clear when we add what is idiosyncratic to her account, i.e., the hidden conditionals. When added the Heimian proposal can be presented as follows:

⁹More recent proposals for the semantics of *want* that mainly focus on explaining the distribution of mood in attitude complements can be found in Portner and Rubinstein (2020); Giannakidou and Mari (2021). A recent discussion of the semantics of *want* and their conceptual connection to conditionals can be found in Grano and Phillips-Brown (2020).

Two notions of *de se* in desire reports

(29)



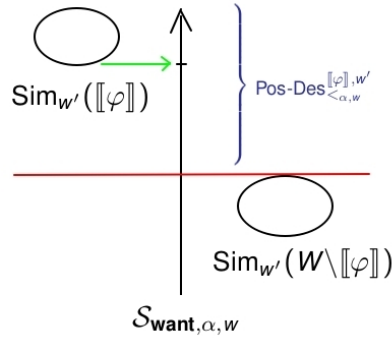
‘Minimax-betterness’ with **hidden conditionals**
as the source of quantification based on an ordering of possible worlds

On Heim’s account, we get a picture like the one in (29) pointwise for each doxastic alternative.

A slightly different presentation of the same truth conditions that brings out the desirability predication more clearly and will allow me in the following to focus on the main structure of Heim’s truth conditions is as follows:

$$(30) \quad \text{Pos-Des}_{<_{\alpha, w}}^{\llbracket \varphi \rrbracket, w'} = \{w'' : w'' <_{\alpha, w} w''', \text{ for every } w''' \in \text{Sim}_{w'}(W \setminus \llbracket \varphi \rrbracket)\}$$

(31)



$$w \in \llbracket \alpha \text{ wants } \varphi \rrbracket \text{ iff for every } w' \in \text{Dox}_\alpha(w), \\ \text{Sim}_{w'}(\llbracket \varphi \rrbracket) \subseteq \text{Pos-Des}_{<_{\alpha, w}}^{\llbracket \varphi \rrbracket, w'}$$

This means that a sentence of the form α wants φ is true in a world w iff for every doxastic alternative $w' \in \text{Dox}_\alpha(w)$ it is the case that every world in $\text{Sim}_{w'}(\llbracket \varphi \rrbracket)$ lies in the range above the threshold determined by $\text{Sim}_{w'}(W \setminus \llbracket \varphi \rrbracket)$.¹⁰

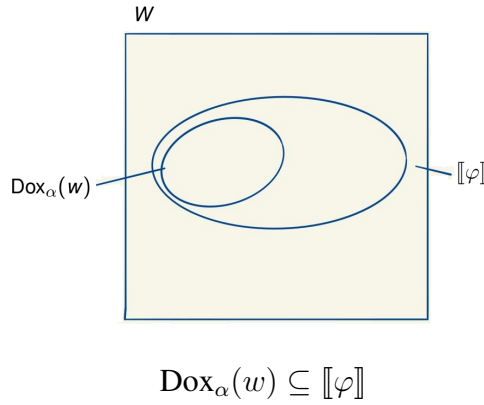
8. The notional difference between ascriptive and evaluative *de se*

In this section, I address the notional difference between ascriptive and evaluative *de se*. I want to start by illustrating what this difference amounts to when we compare Hintikka’s and Heim’s semantics directly.

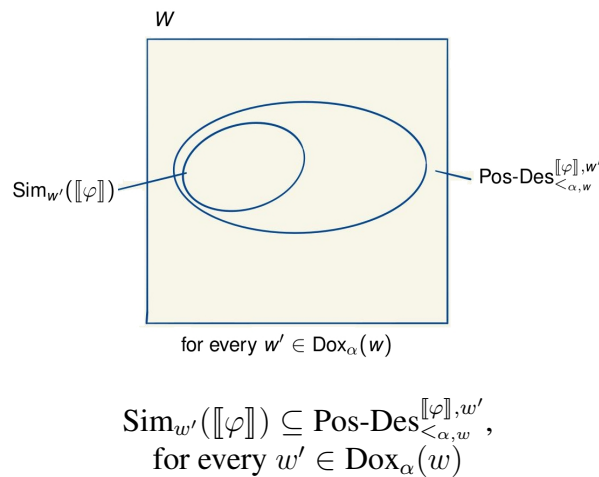
¹⁰Admittedly, Heim’s semantics doesn’t involve measure functions. But we can redefine the semantics in a way that it does, see for example the discussion in (Lassiter, 2017: chapter 3.4.3) and the similarities between modal *good* in Sode (2018) and the interpretation of temporal adjectives in von Stechow (2009). The question whether the strict order on possible worlds at the core of Heim’s proposal would give us the right kind of scale, as discussed more generally in Lassiter (2017), is a question that needs to be addressed independently.

Reversal of predication order. On both accounts, we have a quantificational structure. The main difference is that on Hintikka’s semantic the complement proposition is the nuclear scope of the quantificational tripartite structure, while the complement proposition on Heim’s semantics contributes to the restrictor of the quantificational tripartite structure. On Hintikka’s semantics the quantificational structure is associated with the attitude predicate itself, on Heim’s semantics the quantificational structure is due to a hidden conditional and not associated with the underlying evaluative predicate.¹¹ So while on Hintikka’s account the complement proposition is taken to be a predicate that is predicated to be true of every world in a set of ideal worlds that maximally conform with all the properties that the attitude holder self-ascribes, on Heim’s account the complement proposition contributes by characterizing a set of worlds of which positive desirability (= being above a certain threshold) is predicated. I want to call this set the “subject matter” of predication.¹²

Hintikka-structure: The complement proposition is predicated.



Heim-structure: The complement proposition contributes to the subject matter of predication.



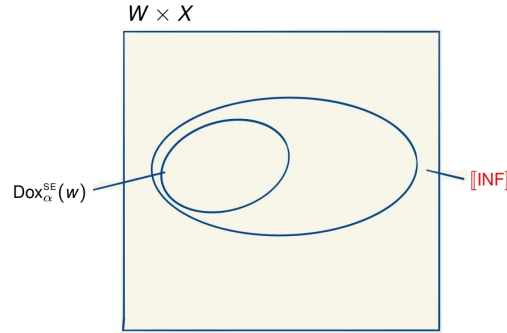
All of this carries over when we switch to centered worlds.

¹¹Remember that the assumption of hidden conditionals is idiosyncratic to Heim’s account and missing from other accounts. So on other accounts, there wouldn’t even be a quantificational structure in the first place.

¹²This is inspired by Pesetsky (1991)’s use of “subject matter” in his discussion of desire reports.

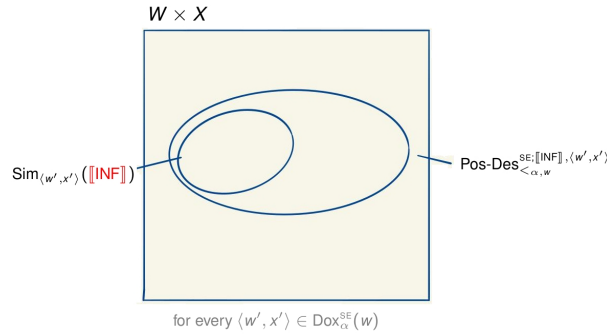
Two notions of *de se* in desire reports

Hintikka-structure (*de se*): The infinitival-property is predicated.



$$\text{Dox}_{\alpha}^{\text{SE}}(w) \subseteq \llbracket \text{INF} \rrbracket$$

Heim-structure (*de se*): The infinitival-property contributes to the subject matter of predication.



$$\text{Sim}_{\langle w', x' \rangle}(\llbracket \text{INF} \rrbracket) \subseteq \text{Pos-Des}_{<_{\alpha, w}}^{\text{SE}; \llbracket \text{INF} \rrbracket, \langle w', x' \rangle} \text{ for every } \langle w', x' \rangle \in \text{Dox}_{\alpha}^{\text{SE}}(w)$$

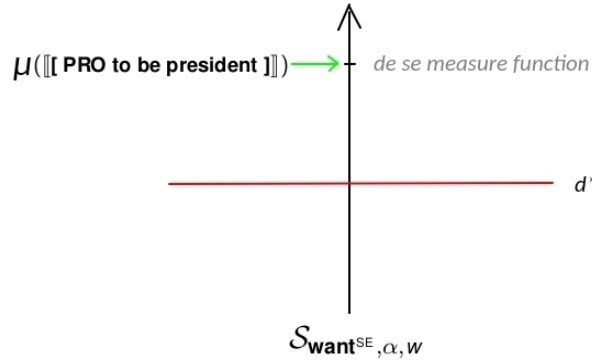
This is summarized in the following overview:

- (32) *De se* on a Hintikka-structure
 - a. We have a set of alternatives (an “upper limit”).
 - b. The infinitival-denotation is ascribed to each alternative.
- (33) *De se* on a Heim-structure
 - a. The infinitival-denotation is used to characterize a set of centered worlds as the subject matter.
 - b. Being on the upper end of the scale above a certain threshold is predicated to be true of each of the centered worlds in the thematic set.

De se on a Hintikka-structure is ascriptive *de se*; *de se* on a Heim-structure is evaluative *de se*.

Generalized: *De se*-measure functions. Since the assumption of hidden conditionals is idiosyncratic to Heim’s proposal, I want to characterize the difference between ascriptive and evaluative *de se* in a more general form. The general form of the desirability predication when applied to the infinitival case can be illustrated in (34); cf. (28):

(34)



$\mu([\text{PRO to be president}])$ is on the upper end of $S_{\text{want}^{SE, \alpha, w}}$
above the threshold value d^*

Against this background, ascriptive and evaluative *de se* can be characterized as follows:

- (35) If in an attitude report the silent subject of an infinitival related to the argument position of the attitude predicate is associated with a *de se*- interpretation, the corresponding notion of *de se* is
ascriptive *de se* if the infinitival-denotation is used to characterize an ideal on a scale with an upper limit, where the upper limit (a “perspective” or “self-representation”, in case the attitude predicate is representational) is introduced by the lexical meaning of the attitude predicate;
evaluative *de se* if the infinitival-denotation is used to determine the semantic object that is mapped by a *de se*-measure function to a value on a scale possibly without an upper limit, where the measure function is introduced by the lexical meaning of the attitude predicate.

While representational attitudes typically involve an upper limit, which means that they can adequately be represented on a Hintikka-semantics, desires don’t. Therefore, the following generalization seems to hold:

- (36) ***De se*-generalization: representational attitudes vs. desires**
 The *de se*-interpretation associated with the silent subject of an infinitival in a report of a representational attitude is ascriptive *de se*.
 The *de se*-interpretation associated with the silent subject of an infinitival in a desire report is *evaluative de se*.

9. Consequences for the grammar of *de se*

A generalization that in the background of the discussion in this paper is the generalization that infinitival complements in attitude reports are restricted to *de se*-interpretations; cf. Morgan (1970); Chierchia (1989) and many others in their following.¹³ This constraint is sometimes stated with respect to PRO:

¹³In recent work, Pearson & Roeper discuss potential counter-examples to this generalization: Pearson & Roeper (to appear), Pearson and Roeper (2021).

(37) ***De se*-constraint on the interpretation of PRO in attitude reports**

PRO – as the silent subject of an infinitival related to the argument position of an attitude predicate – can only be interpreted *de se*.

One might ask: Why is this so? If we look in the literature, the usual explanation is that PRO is obligatorily bound by an attitude predicate that quantifies over centered worlds with a *de se*-Hintikka perspective as its restrictor.

To give an example, I want to summarize how PRO is discussed in von Stechow (2004). In von Stechow (2004) we read:

“PRO is a variable without case but with φ -features. It is bound by the nearest verb of attitude. In order to insure this, PRO must have two syntactic features: **log** and **local**. The syntactic properties of the features are stated by the following rule:

(38) **The features **log**(ophoric) and **local****

- a. A variable with the feature **log** is bound by a verb of attitude.
- b. A variable with the feature **local** is bound by a structurally adjacent verb of attitude.

Given that these features are not interpretable, they are deleted at LF. The definition of PRO is therefore this:

- (39) Definition of PRO. PRO is a variable without Case but with φ -features and the features **log** and **local**. It is not pronounced at PF.

An immediate consequence of this definition is that PRO can never be deictic. It is always *de se*.

Illustrated for an example on the basis of (von Stechow, 2004: p. 459: ex. (71)):

- (40) a. Bill hopes to win.
b. ... **Bill hopes** $\lambda\langle x, t, w \rangle \dots x^{\mathbf{log}, \mathbf{local}}/\text{PRO}/$ **to win**

How does this actually guarantee that PRO “is always *de se*”, as von Stechow writes? The LF in (40b) by itself does not guarantee a *de se*-interpretation. Only in combination with a particular assumption about the semantics of the attitude predicate that licenses the features **log** and **local** under binding do we arrive at the *De se*-constraint for PRO.¹⁴ von Stechow (2004) assumes that attitude predicates that license PRO have a semantics following the scheme in (41):

(41) **Semantics of attitudes (de se)**

Let ATT be any verb of attitude.

$$\begin{aligned} \|\text{ATT}\| &= \lambda P \in D_{e(i(s,t))} \cdot \lambda x \in D_e. \lambda t \in D_i. \lambda w \in D_s. \\ &\quad \forall \langle x', t', w' \rangle \in H_{\text{ATT}}(x, t, w): P(x')(t')(w') = 1. \end{aligned}$$

¹⁴See (?: p. 9)’s distinction between “property-LFs” and “*De Se*-LFs”. (?: p. 9) characterize a *De Se*-LF as a property-LF that comes with the requirement that the attitude predicate has a *de se*-semantics, as in von Stechow’s (41). If the attitude verb has a *de re*-semantics, as for example (?: p. 9)’s **think**_{reflDeRe}, the result would not necessarily be a *de se*-interpretation. The term “*de se* LF” was originally used in Percus and Sauerland (2003). See also Zimmermann (to appear) for a more general discussion of infinitival complements and their interpretation options.

The point I want to make in this section is that this explanation, as it stands, only covers cases of ascriptive *de se* and does not carry over to cases of evaluative *de se*. Problematic are not the assumptions about the LF. As we have seen above, we can assume that the LFs for desire reports with *want* on a Hintikka-semantics and a Heim-semantics are exactly the same. Problematic is that attitude predicates that involve a notion of ascriptive *de se* don't follow the general scheme in (41). In fact, if we extend Heim (1992)'s semantics to the *de se*-case, PRO is not bound by the underlying evaluative predicate but by a hidden conditional operator. If one were to extend other accounts that don't assume hidden conditionals (such as for example Levinson (2003); Villalta (2008); Lassiter (2011)) to the *de se*-case, one would probably assume that the infinitival denotations are mapped directly onto a desirability scale or are compared with contextually given alternatives.

So it seems that we have to distinguish two cases when we address the *de se*-constraint of PRO: In the case of an ascriptive attitude, PRO seems to guarantee ascriptive *de se* that can be traced back to the presence of a *de se*-Hintikka-perspective as the restrictor of an universal quantifier in the lexical semantics of the attitude predicate; in the case of evaluative *de se*, PRO seems to guarantee evaluative *de se* that can be traced back to the presence of a *de se*-measure function in the lexical semantics of the attitude predicate.

10. Infinitivals in desire reports: Beyond *want*

An interesting aspect of extending the Heimian account of *want* to the *de se*-case is that given her assumption that the desire predicates *want*, *wish* and *glad* share the same basic semantics, the extension should carry over to infinitivals with *wish* and *glad*. I want to focus here on *glad*. As briefly discussed in Sode (2021), the interpretation of an infinitival in a construction with *glad* seems to depend (among other factors) on the choice of matrix mood. In (42a), we seem to get a factive interpretation for the infinitival; in (42b), we seem to get a counterfactual interpretation.

- (42) a. John is glad to be at home (and not at the office).
b. John would be glad to be at home (and not at the office).

Interesting about (42b) is also that the sentence is “modally independent” in a way that (43) is not: While in (43), we seem to be missing contextual information (Under what circumstances would John claim such a thing?), no such information is required in (42b).

- (43) John would claim to be at home (and not at the office).

Given the idea that the infinitival in a desire report with *want* is actually interpreted as the restrictor of a hidden conditional on the proposed extension of Heim's account, and given the assumptions about the interpretation of *glad* in Sode (2021), it wouldn't be a far stretch to assume that the infinitivals in (42) also restrict conditional operators. That would neatly explain the facts.¹⁵ The (simplified) structure would look as follows:¹⁶

¹⁵Note that in Sode (2021) the factivity of factive desire reports with *glad* + *that*-clause is not attributed to the semantics of *glad* or the semantics of the complementizer *that* but to a silent operator @ that is the counterpart to conditional *will/would*.

¹⁶For the discussion of *de se* it may be of interest that we find the same pattern with predicates like *good*. Clearly,

- (44) a. [**Mary is glad** Op_∅][@ [**PRO to be at home**]]
 b. [**Mary be glad** Op_∅][**would** [**PRO to be at home**]]

Of course, such an analysis immediately raises the question: Why then can't we use infinitivals as antecedents in counterfactual conditionals more generally? Why only if they relate to an argument slot of predicates like *glad*, as the contrast in (45) suggests?

- (45) a. Mary would be glad to win the lottery.
 b. *Mary would be rich to win the lottery.

At this point, I don't have any answer.¹⁷

Another question I have to leave open here is how this discussion extends to surprise predicates as discussed in Romero (2015) and other types of what Uegaki and Sudo (2019) call "preferential predicates".

11. Conclusion

I have argued that Lakoff's example can be used to illustrate that desire reports may involve two different notions of *de se*: While desire reports with infinitival complements are cases of evaluative *de se*, desire reports with an ECM-construction are cases of ascriptive *de se*, if they involve *de se* at all. I have argued that evaluative *de se* and ascriptive *de se* have different conceptual structures: While in the case of ascriptive *de se*, the infinitival denotation is predicated to be true of every centered world in a set of Hintikka-alternatives, in the case of evaluative *de se* the infinitival denotation is used to characterize a set of centered worlds of which desirability above a certain threshold is predicated. If these assumptions about desire reports with infinitival complements are correct, the standard explanation for the *de se*-constraint of PRO does not carry over to desire reports. The grammar of *de se* has a second source: *de se* measure functions.

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these examples don't involve any notion of *de se*.

- (i) a. It is good to be at home (and not at the office).
 b. It would be good to be at home (and not at the office).
 (ii) a. [**it_∅ is good**][@ [**PRO to be at home**]]
 b. [**it_∅ be good**][**would** [**PRO to be at home**]]

The pattern seems to also extend to *for*-infinitivals with *good*.

- (iii) a. It is good for you to be at home (and not at the office).
 b. It would be good for you to be at home (and not at the office).

A semantics for *good* that is closely related to the Heim's semantics for desire reports can be found in Sode (2018).

¹⁷Note that the idea that certain infinitival complements are conditional in nature has also been suggested in the syntactic literature: For Pesetsky (1991), ECM-complements of desire predicates like *want* are *if*-clauses that restrict a conditional operator on some level of syntactic analysis.

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