Perspectival reflexives and event semantics[1]

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Abstract. This paper presents a unified semantic theory of long-distance reflexivity inside and outside of indirect discourse. Long-distance reflexives are argued to be discourse anaphors with presuppositional restrictions to (shifted) perspective holders. Perspective-shift is analyzed in the event semantics: In indirect discourse, the perspective is assigned to the agent/experiencer of the attitudinal event. By modelling the analysis in the event semantics instead of the modal semantics of indirect discourse, it is possible to generalize it to non-attitudinal cases of long distance binding, using other event types and thematic roles.

Keywords: long-distance reflexives, indirect discourse, perspective shift, anaphora.

1. Introduction

This paper discusses the semantics of long-distance reflexives (LDRs), reflexive pronouns with antecedents outside of their minimal clause. A typical environment where LDRs are found, is in indirect discourse. The Latin example in (1) illustrates this:

(1) *Rogatus   sum   a … matre$_i$ tua   … [ut venirem   ad se$_i$]*
      asked.PTCP is.1SG by   mother your   that come.PST.SBJV.1SG to REFL.ACC

  'I was asked by your mother$_i$ to come to her$_i$' (Cic. ad Brut. 24.1; Menge, 2000: p. 127)

LDRs in Latin are particularly frequent in indirect discourse, where they refer to the the attitude holder (AH), the individual whose propositional attitude the indirect discourse expresses (Fruyt, 1987; Solberg, 2011; Jøhndal, 2012: chap. 4).[2] The AH is often, but not necessarily, a subject. Non-subject-orientation is exemplified in (1), where the LDR antecedent is in an agentive PP of a passivized speech predicate. LDRs with this behaviour are attested in several languages in addition to Latin, such as Japanese (Iida, 1996; Oshima, 2007; Nishigauchi, 2014), Mandarin (Huang and Tang, 1991; Huang and Liu, 2001), Icelandic (Maling, 1984; Sells, 1987; Sigurðsson, 1990) and Tamil (Sundaresan, 2012).

LDRs are also attested in certain non-attitudinal environments, as in the Latin sentence in (2), where an LDR occurs in a complement to *deserve* and refers to the subject of that predicate:[3]

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[2]I use *propositional attitude* in a wide sense, covering both mental states and utterances (see e.g. Pearson, 2015a).

[3]In (2), the deserving predicate itself is embedded under an attitude predicate, which is immaterial to the topic.

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(2) *unum   hoc   scio,   [hanc$_i$ meritam   esse   [ut   memor*
     only.ACC this.ACC know.1SG she.ACC deserve.PTCP be.INF that mindful.NOM

     esses   sui$_i$]]
     be.SBJV.2SG REFL.GEN

     'I know only this, that she$_i$ has deserved that you remember her$_i$.' (Ter. Andr. 281; Kühner
     and Stegman, 1955: p. 613)

This is not a Latin quirk. LDRs are also found in non-attitudinal environments in Tamil and
Japanese, while they are restricted to indirect discourse in Mandarin and Icelandic. Cross-
linguistic work suggest that long-distance reflexivity in non-attitudinal environments is related
to perspective shift (Kuno and Kaburaki, 1977; Sells, 1987; Sundaresan, 2012, a.o.).

The non-attitudinal cases are challenging to the analysis of LDRs: Given the AH-orientation
of LDRs in indirect discourse, an account involving centred worlds easily comes to mind.
However, it is difficult to see how a centred worlds analysis could be extended in a motivated
way to the non-attitudinal cases. An alternative is to propose a unified account of perspective
shift both inside and outside of indirect discourse, and link LDR reference to this perspectival
mechanism. The challenge then is to correctly predict AH-orientation in indirect discourse.

This paper will argue for such a unified approach to perspective shift, based on event seman-
tics. In indirect discourse, the perspective is shifted to the agent of an utterance event or the
experiencer of a mental state, which accounts for the AH-orientation. In non-attitudinal envi-
ronments, other roles are involved. Furthermore, LDRs are argued to be discourse anaphors
with presuppositional restrictions to perspective holders.

My analyses will be framed in Partial Compositional DRT (PCDRT; Haug, 2013). The pri-
mary motivation for analyzing long-distance reflexivity in a dynamic semantic framework is
the occurrence of LDRs in so-called *unembedded indirect discourse* (Bary and Maier, 2014),
stretches of indirect discourse which are not syntactically embedded and which often span mul-
tiple sentences. (3) is a Latin example of this. The phenomenon is also attested in Icelandic
(Sigurðsson, 1990: sect. 3.3), and similar phenomena are found e.g. in Tamil and Japanese
(Sundaresan, 2012: sect. 3.1.2; Sells, 1987: p. 455).

(3) pro$_i$ *misit enim puerum$_j$: se$_i$ ad me venire.*
            sent for   boy.ACC REFL.ACC to me come.INF

     '[Hortensius$_i$] sends a boy$_j$: [to say that] he$_i$ will come to me.' (Cic. Att. 10.16.5; Jøhndal
     2012: p. 132)

An analysis of LDRs in unembedded indirect discourse is given in my doctoral dissertation[4],
but will be left out here. The dissertation will also include a more extensive version of the
present account, including assumptions about compositionality.

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[4]to be submitted at the University of Oslo in March 2017.

This paper is organized as follows: In section 2 I discuss some previous accounts of LDRs and point out a number of challenges. Section 3 shows how LDRs in indirect discourse can be accounted for by means of an event-based approach to perspective shift and an anaphoric semantics of LDRs. The account is extended to a non-attitudinal case of long-distance reflexivity in section 4. Finally, section 5 concludes the paper and suggests some topics for future research.

2. Previous accounts

Some version of a centred worlds or context quantification semantics is usually appealed to in contemporary analyses of AH-referring pronominals such as PRO, shifted indexicals and logophors (see e.g. Chierchia, 1989; Schlenker, 2003; Pearson, 2015b). This has also been tried out for LDRs: In their analysis of LDRs in Mandarin indirect discourse, Huang and Liu (2001) argue that the reflexive undergoes LF movement to the left periphery of the clause containing it. The moved pronoun is interpreted as an individual abstractor, turning the reported proposition into a property. This property is in turn interpreted as a de se attitude of the AH, following Lewis (1979) and Chierchia (1989). A slightly different, but related semantics is used in Oshima (2007). He draws on Schlenker (2003)'s context shift analysis of logophors to account for LDRs in indirect discourse in Japanese: They are indirect indexicals referring to the agent of a reported speech/thought context. Analyses of this kind readily account for the AH-orientation of LDRs, as the assumed semantics of indirect discourse makes available a variable with the right denotation: the centre or the reported contextual agent. However, it is unclear how analyses along such lines can be extended to non-attitudinal cases of long-distance binding, as they rely on specific semantic properties of indirect discourse to model long-distance binding.

Oshima proposes a separate analysis for the non-attitudinal cases in terms of perspective or empathy, following Kuno (1987). Perspectival expressions such as *to the left of*, *his/her dear* need to be evaluated relative to a perspective holder. By default, the perspective holder is the speaker, but in certain environments, the perspective can be shifted to a discourse-internal participant (see Bylinina et al., 2014 for an overview of the phenomenon and the relevant literature). LDRs in non-attitudinal environments have been shown to refer to shifted perspective holders (Kuno and Kaburaki, 1977; Kuno, 1987; Sells, 1987; Sundaresan, 2012; Bylinina et al., 2014; Charnavel, 2016).[5] There seems to be strong empirical reasons for analyzing the non-attitudinal cases in terms of perspective. However, it seems somewhat unsatisfactory to analyze attitudinal and non-attitudinal, perspectival LDRs along entirely different lines. Preferably, an account of long-distance reflexivity should explain why the reflexive has specifically these two uses in several languages.

A possible way to go is to assume that all LDRs are perspective sensitive, and propose an account of perspective shift which applies both in indirect discourse and in non-attitudinal environments. A prominent example of an approach along such lines is Sells (1987). Sells analyzes

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[5]In languages where reflexive pronouns can take 1/2p antecedents, reference to the default perspective holder may be possible too. This seems to be the case in Mandarin, cf. Huang and Liu (2001: sect. 3.2.1), and at least in some dialects of Japanese, cf. Nishigauchi (2014: p. 159).

perspective in terms of three primitive discourse roles: the *Source*, i.e. a communicative agent, the *Self*, the individual whose mental content a piece of discourse represents, and the *Pivot*, the individual from whose spatio-temporal location the proposition is evaluated. By default, all three roles are assigned to the external speaker, but in given contexts, one or more of the roles can be shifted to a discourse-internal participant. Furthermore, he assumes that the shifting of the roles obeys an implicational hierarchy: If the Source is shifted, so are the Self and the Pivot, and shifting the Self implies a shift of the Pivot. However, the Pivot can be internal while the two other roles are external. In complements to utterance predicates, the Source, together with the two other roles, is shifted to the utterance agent. In complements to mental state predicates, the Self and the Pivot are shifted, while the Source remains external. In non-attitudinal cases of perspective shift, only the Pivot is shifted. LDRs are taken to be discourse anaphors restricted to shifted roles. To account for cross-linguistic distributional differences, Sells assumes that languages differ with respect to which role the LDR picks up.

By subdividing perspective into three discourse roles, Sells manages to capture attitudinal and non-attitudinal perspective shift in a uniform way. There are, however, problematic sides to the analysis. Firstly, it does not build on commonly assumed semantic machinery, but postulates dedicated discourse roles. Secondly, Sells uses uninterpreted DRT representations, and it is therefore not possible to calculate truth conditions or see how the discourse roles integrate with attitudinal semantics more generally.

Sundaresan (2012) offers a generalized perspective account of LDRs in Tamil, although in a quite different framework from Sells'.[6] In Tamil, LDRs are found in indirect discourse, where they refer to the AH, and in clauses characterized by spatio-temporal perspective shift. Sundaresan analyzes LDR binding as a two-step process: Firstly, there is a covert pronoun in the specifier of a perspectival functional projection of the clause containing the LDR. This perspective pronoun binds the LDR syntactically. Secondly, the perspective pronoun itself is resolved to a suitable antecedent. The covert perspective pronoun is not structurally bound, but finds its antecedent through some semantic/pragmatic mechanism. The antecedent of the covert perspective pronoun must be suitable, i.e. it must be an appropriate perspective holder and have phi-features matching those of the perspective pronoun. In other words, the LDR is always locally bound by the perspective pronoun, and the long-distance effect is due to the kind of antecedents the perspective pronoun can take. The perspective pronoun also has a semantic function in the clause that contains it. Clauses of indirect discourse are interpreted relative to the referent of the covert pronoun. It is, in other words, the perspective pronoun, not the attitude predicate, which is responsible for the AH-relative interpretation of the indirect discourse. In non-attitudinal perspective-shifting environments, the perspective pronoun shifts the spatial or temporal interpretation of the clause to its referent (see in particular Sundaresan, 2012: sect. 4.3).

Sundaresan's analysis does not spell out formally the semantic/pragmatic mechanism which resolves the perspective pronoun to an antecedent. Regardless of how this is done, the analysis makes a clearly unwanted semantic prediction in a specific environment: When an LDR is

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[6]Analyses along similar lines have been proposed for Japanese by Nishigauchi (2014) and for French by Charnavel (2016).

embedded under multiple report predicates with different subjects, it is ambiguous between a resolution to a higher and a lower antecedent in Tamil as well as in other languages with LDRs (see e.g. Sundaresan, 2012: pp. 15-17; Solberg, 2011: pp. 27-28; Huang and Liu, 2001: pp. 146-147). The following fake English example illustrates this point, where the LDR can take both the sentence's AHs, John or Peter, as an antecedent.[7] Julie, the addressee of John's utterance, is not a suitable antecedent, as she is not an AH.

(4)   John$_i$ says to Julie$_j$ that Peter$_k$ believes that Mary loves $SE_{i/k/*j}$.

On Sundaresan's approach, an LDR is always syntactically bound by its clause-local perspectival pronoun. Ambiguities like in (4) can therefore not be due to the binding of the LDR itself. According to Sundaresan, this pattern is a result of an ambiguity on the covert perspective pronoun (Sundaresan, 2012: sect. 5.5). Remember, however, that the perspective pronoun is also responsible for the interpretation of the clause containing it. On the reading of (4) where the LDR is bound by John, the higher AH, we are therefore forced to conclude that the report of Peter's belief is relativized to John, not Peter, which is clearly wrong.

To sum up: A generalized account of perspective seems like a promising way to unify the attitudinal and non-attitudinal cases of long-distance reflexive binding. It is important, however, that the account predicts AH-reference in indirect discourse and is able to handle the ambiguity of LDRs embedded under multiple attitude predicates.

3. A new account of perspectival reflexives in indirect discourse

The alternative I am proposing has two components: Firstly, I argue for a generalized account of perspective shift based on events and thematic roles, in part inspired by the account of context shift in Deal (2014). In indirect discourse, the perspective is shifted to the utterance agent or the experiencer of a mental state, which explains the AH orientation; in non-attitudinal environments, other roles are used. Secondly, LDRs are claimed to be discourse anaphors with presuppositional restrictions to perspective holders. When there are multiple perspective holders accessible to the anaphoric pronoun, as when it is embedded under multiple attitude predicates, ambiguity is immediately predicted. Section 3.1 presents an event semantics of indirect discourse and the implementation of perspective shift. Perspective anaphors are introduced in section 3.2. In section 4, I show how a non-attitudinal case of long-distance binding can be accounted for.

3.1. Perspective shift in indirect discourse

In standard semantic treatments of indirect discourse, an attitude verb is taken to quantify over the worlds compatible with the AH's speech, thought, desire etc. (Hintikka, 1969). In other words, the complement proposition is relativized to an individual. Events are usually omitted entirely.

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[7]SE represents an LDR here.

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Valentine Hacquard has put forward an event-based semantics for indirect discourse (Hacquard, 2006, 2010; Anand and Hacquard, 2008). Utterance and mental state verbs involve a special kind of event, a *contentful event*, that is, an event associated with a propositional content. Instead of relativizing the complement proposition to the AH, it must hold in the worlds compatible with the content of the contentful event. (5) is a simple example of a speech report and the corresponding PCDRT representation, based on Hacquard's semantics:[8]

(5) a.   John says that it is hailing.

b.

$$
\boxed{
\begin{array}{l}
\boxed{e_1 x_1} \\[4pt]
john(x_1) \\
ag(e_1) = x_1 \\
assertion'(e_1) \\[6pt]
content(e_1, \boxed{\begin{array}{l} \boxed{e_2} \\ hailing'(e_2) \end{array}})
\end{array}
}
$$
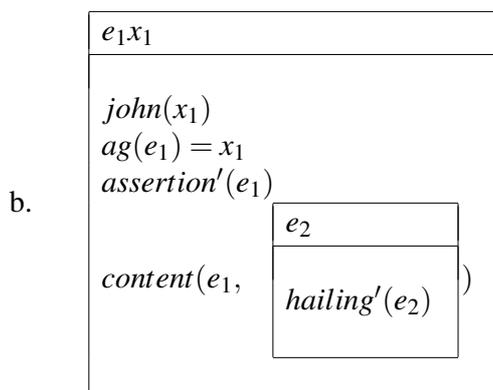
The superordinate event e_1 is an assertion event with John as the agent. The interpretation of the complement is relativized to this event. In my PCDRT semantics, the object embedded under the contentful event is a DRS, which is important for the anaphora account to be introduced below.

Attitudinal events have another property which is crucial for my purpose: They are associated with what we might call a *conscious participant*, an individual whose words or mind the complement clause expresses. This individual can be characterized in terms of thematic roles: It is the agent in the case of utterance events, or the experiencer in the case of mental states. Note that this individual corresponds to the AH in more traditional attitudinal semantics. It is therefore possible to use the thematic roles of the attitudinal event to uniquely identify the AH, and this will be a crucial component in the account of perspective shift.

The idea of using the Hacquardian event semantics of indirect discourse to analyze shifting phenomena comes from Deal (2014)'s account of context shift in Nez Perce. In that language, a number of indexicals can be shifted under attitude verbs. In particular, first person pronouns can be shifted to the the AH. According to Deal, this is the consequence of operators in the left periphery of the attitudinal complement clause which overwrite coordinates of the context parameters with values derived from the thematic roles of the attitudinal event. In particular, the speaker coordinate can be overwritten by the agent/experiencer of the attitudinal event, which gives the shifted first person reading within the indirect discourse.

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[8]The representation in (5b) looks a bit different from the representations in e.g. Hacquard (2010), but it does in fact involve the same modal semantics. In PCDRT, DRSs abbreviate complex lambda terms (Haug, 2013). In examples like (5b), the *content* condition abbreviates a quantification over worlds compatible with the content of the superordinate event. This will be spelled out in detail in my dissertation.

In my analysis, thematic roles are used in a similar way to model perspective shift to the AH in indirect discourse. Since I have an anaphoric account of long-distance binding, perspective shift should interact with anaphora resolution. One way of modelling that interaction is to introduce a dedicated discourse referent for the perspective holder within the embedded DRS. When perspective shift is added to the DRS in (5b), the result is as follows:

(6)

$$
\begin{array}{|l|}
\hline
e_1 x_1 \\
\hline
john(x_1) \\
ag(e_1) = x_1 \\
assertion'(e_1) \\
content(e_1, \begin{array}{|l|} \hline e_2 x_2 \\ \hline PHolder_{reg}(x_2) \\ \partial(x_2 = \iota x.cp(e_1) = x) \\ hailing'(e_2) \\ \hline \end{array}) \\
\hline
\end{array}
\quad = \quad
\begin{array}{|l|}
\hline
e_1 x_1 \\
\hline
john(x_1) \\
ag(e_1) = x_1 \\
assertion'(e_1) \\
content(e_1, \begin{array}{|l|} \hline e_2 x_2 \\ \hline PHolder_{reg}(x_2) \\ \partial(x_2 = x_1) \\ hailing'(e_2) \\ \hline \end{array}) \\
\hline
\end{array}
$$

A discourse referent x_2 is introduced in the embedded DRS. This discourse referent is associated with a special condition, $PHolder_{reg}$, marking it as a perspective holder. The subscript *reg* on this condition indicates that it is a *register condition*, a purely formal condition which labels the discourse referent without predicating anything of the individual assigned to that discourse referent.[9] This is important, because being a perspective holder is presumably not itself part of truth-conditional semantics. It only affects truth-conditional semantics when perspective-sensitive expressions are present. Furthermore, x_2 is associated with a condition which states that the individual assigned to x_2 is equal to the *cp* (conscious participant) of the embedding event, i.e. its agent or experiencer. This equality condition is marked as presuppositional by the partial operator ∂ (Beaver, 1992). We know from the superordinate DRS that the experiencer of e_1 is x_1. We can therefore replace the iota-expression with x_1 in the equality condition, as I have done in the second DRS in (6).

Outside of shifting environments, the external speaker is the perspective holder. In a complete account, there should therefore be a perspective holder discourse referent in the matrix DRS. I leave that out here, however. LDRs referring to contextual participants is ruled out in Latin, since reflexive pronouns are obligatorily third person (but see footnote 5).

3.2. LDRs as perspective anaphors

In (6), the perspective shifting machinery serves no purpose, as there are no perspective-sensitive expressions in the indirect discourse. Let us now consider a sentence with an LDR,

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[9] This is possible because PCDRT has a type distinction between discourse referents, which are *registers*, and the individuals (or events, time intervals etc.) assigned to those registers (cf. Haug, 2013). Register conditions apply to registers, while normal conditions apply to entities assigned to registers.

where the shifting does have an effect. In the Latin example in (7), an LDR is bound by the experiencer of a mental state predicate.[10]

(7) *Iam   inde ab initio   Faustulo$_i$ spes   fuerat [regiam   stirpem*
      already since from beginning Faustulus.DAT hope.NOM was   royal.ACC lineage.ACC

      apud   se$_i$ educari].
      before REFL.ACC educate.INF.PASS

      'Already from the beginning, Faustulus$_i$ had the hope that someone of royal lineage was being educated with him$_i$.' (Liv. 1.5.5; Benedicto, 1991: ex. (21))

Note that in the Latin text, the mental state predicate is a nominative noun, and the experiencer is a dative, a pattern that isn't rendered in the translation.
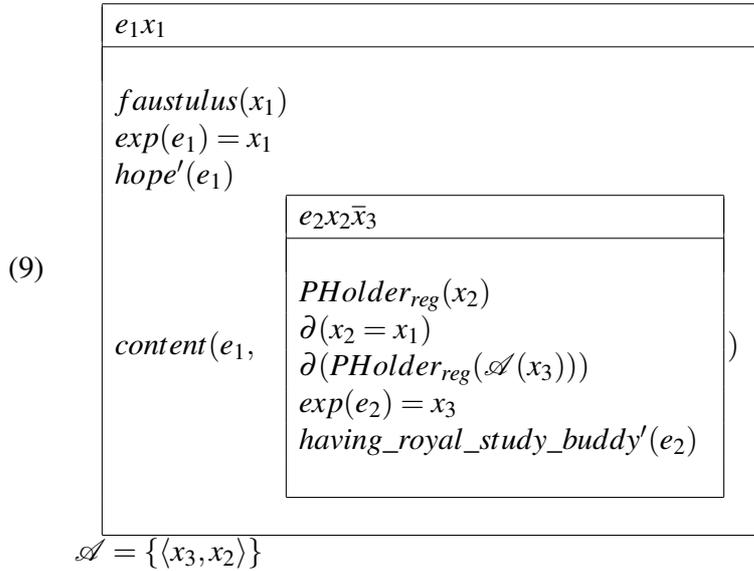
The LDR has the following denotation:

(8) $[[se]]^{M,g} = \lambda P.$
$$\boxed{\begin{array}{|c|} \hline \overline{x}_1 \\ \hline \partial(PHolder_{reg}(\mathscr{A}(x_1))) \\ \hline \end{array}} ; P(x_1)$$

It introduces a discourse referent x_1. The overline over the discourse referent marks it as discourse anaphoric. In PCDRT, anaphors are discourse referents with an underspecified resolution to an antecedent. The actual resolution is handled by a function $\mathscr{A}$ which is driven by pragmatic inference, but constrained by the accessibility relations of DRSs (Haug, 2013: sect. 5.4). The discourse referent is furthermore associated with a presuppositional condition that the antecedent discourse referent, $\mathscr{A}(x_1)$, is a perspective holder, i.e. it is associated with $PHolder_{reg}$.[11]

With this denotation for the LDR, we can draw up a DRS structure of a somewhat simplified version of (7):

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[10]In (7) the complement clause is an *accusative-with-infinitive* construction, not a finite clause. There are good empirical reasons for treating the binding into this clause type on par with binding into Latin finite clauses, e.g. because of the lack of subject orientation and the possibility of discourse antecedents in unembedded indirect discourse, as in example (3) (see e.g. Solberg, 2011).

[11]$PHolder_{reg}$ applies to $\mathscr{A}(x_1)$, not simply x_1, as $PHolder_{reg}$ takes discourse referents, not individuals, as arguments. Discourse referents and individuals are of different types (cf. footnote 9), and while the discourse referent of the LDR and of the antecedent will be assigned to the same individual, they are still distinct discourse referents.
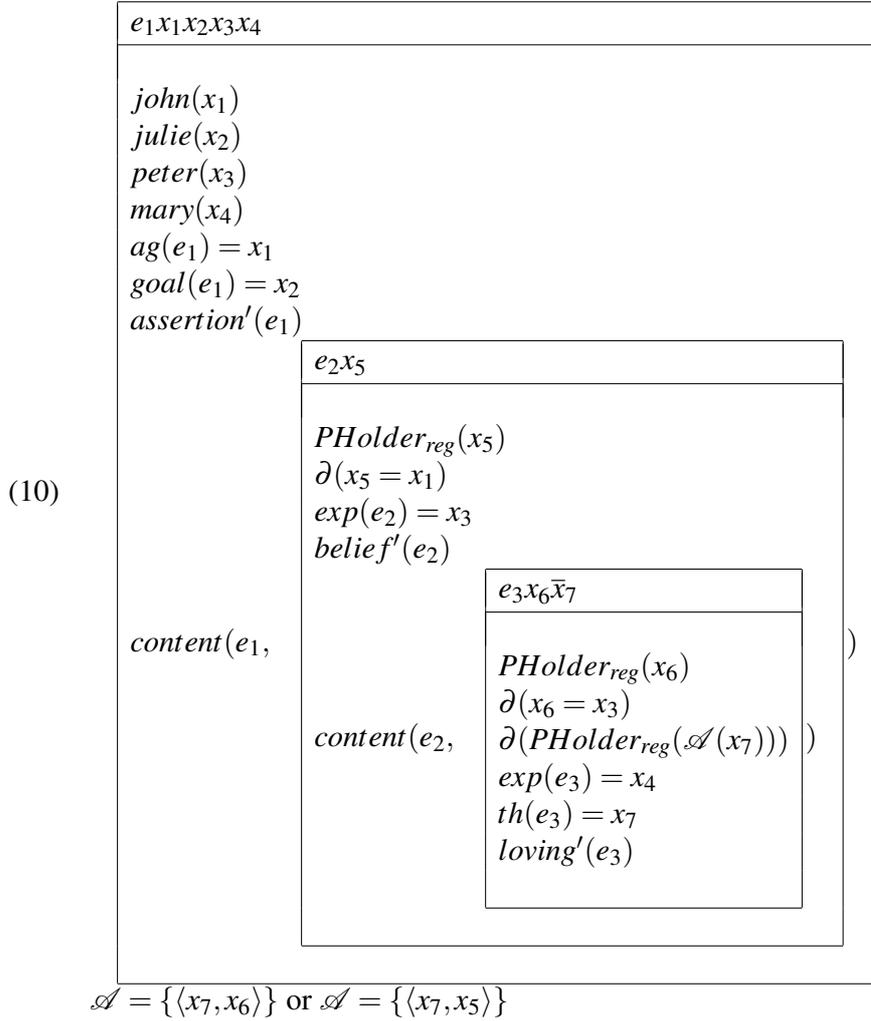
(9)

$$
\boxed{
\begin{array}{l}
\underline{e_1 x_1} \\[4pt]
faustulus(x_1) \\
exp(e_1) = x_1 \\
hope'(e_1) \\[4pt]
content\left(e_1, \;
\boxed{
\begin{array}{l}
\underline{e_2 x_2 \bar{x}_3} \\[4pt]
PHolder_{reg}(x_2) \\
\partial(x_2 = x_1) \\
\partial(PHolder_{reg}(\mathscr{A}(x_3))) \\
exp(e_2) = x_3 \\
having\_royal\_study\_buddy'(e_2)
\end{array}
}
\; \right)
\end{array}
}
$$

$$\mathscr{A} = \{\langle x_3, x_2 \rangle\}$$

A perspective holder discourse referent x_2 is introduced in the complement. x_3 is the anaphoric discourse referent of the LDR. It must be resolved to a perspective holder antecedent. In this example, there is only one, namely x_2, and $\mathscr{A}$ therefore maps x_3 to x_2. The individual assigned to x_2 is equal to x_1, Faustulus, as he is the experiencer of the hoping state e_1. The LDR ends up referring to Faustulus.

On this approach, the AH orientation of LDRs is the consequence of perspective shift to the agent/experiencer of the attitudinal event in indirect discourse. It is not modelled in a fine-grained modal semantics of indirect discourse, as it would be on a centred worlds approach. LDRs will typically refer back to subjects, as agents/experiencers are frequently linked to subjects. Whenever syntax links the agent/experiencer to non-subject arguments, as in (1) and (7), non-subject-orientation is correctly predicted.

The scope of the perspective shifting is a consequence of anaphoric accessibility: The perspective holder discourse referent is assigned in the embedded DRS representing the indirect discourse, and is therefore accessible within that DRS and in DRSs embedded under it (Kamp et al., 2011: pp. 134-137; Haug, 2013: sect. 5.2).

In (9) there was only one potential antecedent for the LDR. (10) is the DRS of (4), where an LDR is embedded under two attitude verbs with different subjects:

(10)

$$
\boxed{
\begin{array}{l}
e_1 x_1 x_2 x_3 x_4 \\[4pt]
\boxed{
\begin{array}{l}
john(x_1) \\
julie(x_2) \\
peter(x_3) \\
mary(x_4) \\
ag(e_1) = x_1 \\
goal(e_1) = x_2 \\
assertion'(e_1) \\[6pt]
content(e_1, \;
\boxed{
\begin{array}{l}
e_2 x_5 \\[4pt]
\boxed{
\begin{array}{l}
PHolder_{reg}(x_5) \\
\partial(x_5 = x_1) \\
exp(e_2) = x_3 \\
belief'(e_2) \\[6pt]
content(e_2, \;
\boxed{
\begin{array}{l}
e_3 x_6 \overline{x}_7 \\[4pt]
\boxed{
\begin{array}{l}
PHolder_{reg}(x_6) \\
\partial(x_6 = x_3) \\
\partial(PHolder_{reg}(\mathscr{A}(x_7))) \\
exp(e_3) = x_4 \\
th(e_3) = x_7 \\
loving'(e_3)
\end{array}
}
\end{array}
} \;)
\end{array}
}
\end{array}
} \;)
\end{array}
}
\end{array}
}
$$

$$\mathscr{A} = \{\langle x_7, x_6 \rangle\} \text{ or } \mathscr{A} = \{\langle x_7, x_5 \rangle\}$$

The anaphoric discourse referent x_7 has two accessible perspective holders: the local perspective holder x_6, or x_5, the perspective holder of the higher complement. There are other discourse referents in x_7's accessibility path too, but none of them are compatible with its perspectival presupposition, and are consequently not suitable. There are therefore two alternative $\mathscr{A}$-functions compatible with this DRS, one which maps x_7 to x_6 and one which maps x_7 to x_5.

A crucial difference between this approach and that of Sundaresan (2012), discussed above, is that the LDR does not need to be locally bound in any way. Therefore, the ambiguity of deeply embedded LDRs can be accounted for as a consequence of recursive perspective shift, without making problematic predictions for the modal semantics. There is also no need to posit any kind of covert structural ambiguity, as the LDR does not retrieve its antecedent through structural binding.

4. How to extend the account to LDRs outside of indirect discourse

There is nothing inherent to this system of perspective shift and long-distance reflexivity which restricts it to agents and experiencers. It is, for example, possible to model addressee-oriented

LDRs in indirect discourse, which is attested in complements to interrogative verbs in Japanese (Bylinina et al., 2014: sect. 2.4). But perhaps more importantly, nothing restricts perspective shift to attitudinal events, and we can therefore extend the account to non-attitudinal environments.
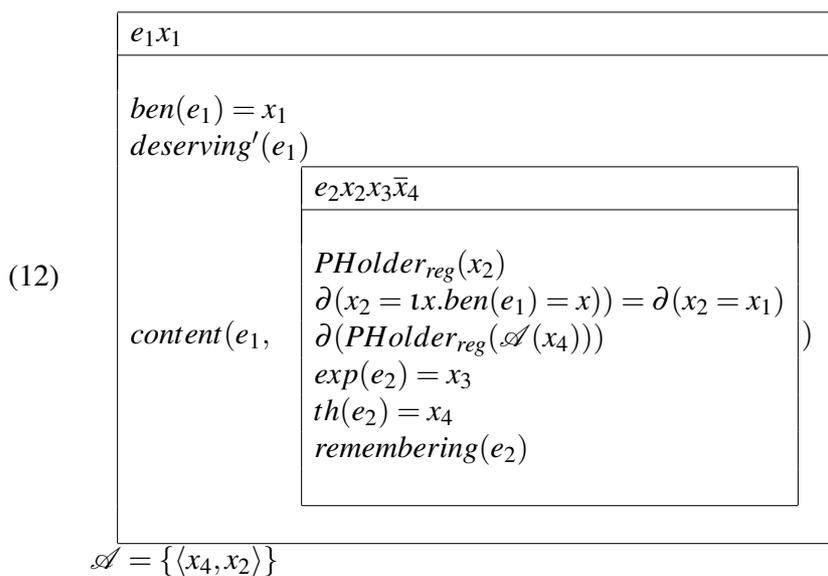
It seems to me to be more difficult to make strong empirical generalizations for long-distance reflexivity outside of indirect discourse than inside. A complete account should rely on a detailed investigation of the phenomenon in a language where such LDRs are widely attested. In this paper, I will simply draw up a draft of what such an account might look like, using a Latin example.

In Latin, LDRs are occasionally attested in subjunctive complement clauses to verbs meaning *deserve*, as exemplified in (11) (= (2)). The LDR picks up the subject of *deserve*:

(11)   *unum   hoc   scio,   [hanc$_i$ meritam   esse   [ut   memor*
          only.ACC   this.ACC   know.1SG   sheACC   deserve.PTCP   be.INF   that   mindful.NOM

          esses   sui$_i$]]
          be.SBJV.2SG   REFL.GEN

          'I know only this, that she$_i$ has deserved that you remember her$_i$.' (Ter. Andr. 281; Kühner and Stegman, 1955: p. 613)

Deserve does not have an attitudinal semantics, as it does not imply that the subject is aware of the complement proposition. The difference between predicates like *deserve* and attitude predicate is minimal, however, as both have a modal semantics. I therefore assume that a deserving state is contentful. Furthermore, I analyze the subject as a benefactive. The perspective is shifted to the benefactive, as the following DRS illustrates:

(12)

$$\boxed{\begin{array}{l} e_1 x_1 \\ \hline ben(e_1) = x_1 \\ deserving'(e_1) \\ content(e_1, \boxed{\begin{array}{l} e_2 x_2 x_3 \bar{x}_4 \\ \hline PHolder_{reg}(x_2) \\ \partial(x_2 = \iota x.ben(e_1) = x)) = \partial(x_2 = x_1) \\ \partial(PHolder_{reg}(\mathscr{A}(x_4))) \\ exp(e_2) = x_3 \\ th(e_2) = x_4 \\ remembering(e_2) \end{array}}) \end{array}}$$

$\mathscr{A} = \{\langle x_4, x_2 \rangle\}$

The only difference between the embedded DRS in (12) and the embedded DRSs in the attitudinal cases is the thematic role of the individual assigned to the perspective holder discourse referent. In indirect discourse, it is the agent/experiencer of the attitudinal event; in (12) it is a benefactive argument. There is no need for a lexical ambiguous pronoun: We can use the same denotation for attitudinal and non-attitudinal LDRs.

5. Conclusion and remaining issues

In this paper, I have identified some problematic aspects of existing analyses of LDRs. Centred worlds analyses account well for the AH orientation of LDRs in indirect discourse. It is difficult to generalize such accounts to LDRs in non-attitudinal environments, however. Instead, I am favourable to accounts where long-distance reflexivity, both inside and outside of indirect discourse, is sensitive to perspective shift.

A challenge with such generalized perspective accounts, however, is to make sense of the AH orientation in indirect discourse. I have argued that this can be done if perspective shift is modelled using events and thematic roles. In indirect discourse, the perspective is shifted to the agent/experiencer of the attitudinal event, while other roles may be used in other environments.

Furthermore, I have argued that LDRs are discourse anaphors with presuppositional restrictions to perspective holders. By using anaphora, the ambiguity of LDRs embedded under multiple attitude predicates is immediately predicted.

An issue which has not been addressed here is the relationship between local and long-distance reflexives. There are good empirical reasons for distinct treatments of the two uses, both in Latin and other languages (cf. my doctoral dissertation; Huang and Liu, 2001; Reuland, 2001). However, there must be some reason why the same lexical item has these two different uses in language after language.

Another interesting issue is the cross-linguistic differences in the distribution of LDRs. As mentioned in the introduction, LDRs are restricted to indirect discourse in some languages, while they have a wider distribution in others. This might be related to differences in perspective shift, or alternatively, in the semantics of the reflexive itself.

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