

# The interpretation of the logophoric pronoun in Ewe

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**Abstract** This paper presents novel data regarding the logophoric pronoun in Ewe. We show that, contrary to what had been assumed in the absence of the necessary fieldwork, Ewe logophors are not obligatorily interpreted *de se*. We discuss the *prima facie* rather surprising nature of this discovery given the assumptions that *de se* construals arise via binding of the pronoun by an abstraction operator in the left periphery of the clausal complement of an attitude predicate, and that logophors are elements that are obligatorily bound by such abstractors. We show that this approach can be reconciled with these facts given the additional assumption that elements that are ‘*de se*’ bound can interact with the concept generator variables posited by Percus and Sauerland (Proceedings of Sinn und Bedeutung 7, 2003a; Proceedings of NELS 33, 2003b) to derive *de re* interpretations of embedded nominals. The proposed set-up has consequences for our understanding of puzzles raised by Heim and Sharvit concerning binding-theoretic effects with *de re* elements, and for the derivation of the obligatorily *de se* interpretation of controlled PRO.

**Keywords** Attitudes *de se* · Attitudes *de re* · Logophoric pronouns · Crosslinguistic semantics · Obligatory control · Ewe

## 1 Introduction

The topic of this paper is the logophoric pronoun in the West African language Ewe. Logophoric pronouns are traditionally defined as elements that (i) obligatorily occur in the scope of an attitude predicate such as *believe* or *say* and (ii) are obligatorily construed as referring to the bearer of the attitude, such as the subject of *believe* or

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say. The logophoric pronoun in Ewe is *yè*; the language also has a ‘plain pronoun’ *e* which is like the English third person pronoun in that its distribution is not confined to attitude reports. The examples below show that properties (i) and (ii) hold of *yè* but not of *e*.<sup>1</sup>

- (1) Kofi be *yè* dzo.  
 Kofi say LOG leave  
 ‘Kofi<sub>i</sub> said that he<sub>i/\*j</sub> left.’
- (2) \**Yè* dzo.  
 LOG leave
- (3) Kofi be *e* dzo.  
 Kofi say 3SG leave  
 ‘Kofi<sub>i</sub> said that he<sub>ij</sub> left.’
- (4) *E* dzo.  
 3SG leave  
 ‘He left.’

In some respects logophoric pronouns like *yè* resemble obligatorily controlled PRO: they can only occur in an embedded clause, and when they do they obligatorily refer to some designated argument of the embedding verb.<sup>2</sup> Consequently, it is tempting to think of logophors as overt instantiations of PRO. One might then suppose that they have interpretive as well as distributional properties in common. This paper investigates whether this expectation is borne out with respect to the property of being interpreted ‘de se’.

It has been known since Morgan (1970) that when obligatorily controlled PRO occurs in an attitude report, it must be interpreted de se. That is, the content expressed by the infinitive or gerund in which it occurs is necessarily first personal with respect to the attitude holder. Take the following sentence:

- (5) John claimed [PRO to be clever].

Sentence (5) reports a claim that John made about himself, namely that he is clever. Typically, when we talk about ourselves, we do so using the first person pronoun: a natural scenario that renders (5) true is one in which John said, “I am clever”. But

<sup>1</sup> This generalization will be refined in Sect. 3.2, where we present evidence that the distribution of *yè* is slightly broader for some speakers of Ewe.

<sup>2</sup> Unlike PRO, however, in the case of *yè* the embedding verb must be an attitude predicate; the class of control predicates is less restricted and includes verbs like *force* which, as pointed out in Chierchia (1990), is non-attitudinal.

notice that this is not the only way that we can talk about ourselves. Consider the following scenario.

- (6) *Scenario*: John has just found an old paper that he wrote, but because his memory is failing him he fails to recognize the paper as one of his own. He reads the paper and, impressed by the content, says, “Whoever wrote this paper is clever.”

In this scenario, John says something about a certain individual, namely the author of the paper. What you and I know, but he does not, is that the author of the paper is none other than John himself; consequently, the content of his speech act is ‘about’ John in some intuitive sense. Is this sufficient to render the control sentence in (5) true in this scenario? No. For it to be true, the content of John’s utterance would not only have to concern himself, but it would have to be first personal with respect to John. That is, John would have to have said “I am clever”—a statement that would require him to be in possession of the crucial information that we have but John lacks, namely that he is the author of the paper.

Had John said “I am clever”, then his speech act would have been an instance of a particular type of attitude called an *attitude de se*. An agent  $\alpha$  bears an attitude de se towards a content  $\phi$  only if (i)  $\phi$  is ‘about’  $\alpha$  and (ii)  $\alpha$  figures in  $\phi$  in virtue of  $\alpha$  thinking of herself in a first personal way. In the case of a speech report, this just means that  $\alpha$  uses the first person pronoun to express  $\phi$ . In the case of a belief report, it means that  $\alpha$  is in a position to use the first person pronoun to report her belief that  $\phi$ . In (6), John’s speech act is not an instance of an attitude de se, since he is unaware that he is talking about himself, and therefore the constituent of his utterance that refers to him is a definite description rather than the first person pronoun. Sentence (5) is false in scenario (6) for precisely this reason. This shows that control sentences such as (5) obligatorily report attitudes de se. We shall describe a pronoun as being obligatorily construed de se just in case it unambiguously produces a report of an attitude de se when it is embedded below an attitude predicate. PRO is such a pronoun.

A natural question to ask is whether there are *overt* pronouns that are obligatorily construed de se. Take the English third person pronoun. It *can* be interpreted de se, but need not be:

- (7) John<sub>i</sub> claimed that he<sub>i</sub> was clever.

We ask the same question concerning (7) as we did about (5): can it truthfully be used to report the scenario in (6)? This time, the answer is ‘yes’. So unlike PRO, *he* need not be interpreted de se. It can be, however, as shown by (8):

- (8) John<sub>i</sub> didn’t claim that he<sub>i</sub> was clever, because he<sub>i</sub> didn’t realize that he<sub>i</sub> was talking about himself.

In (8), the fact that John did not think of or refer to himself in a first personal way is offered as grounds for the falsehood of (7). So *he* can be interpreted *de se*, as in (8), or it can be interpreted *de re*, as when (7) is judged true in the scenario in (6).

Now let us return to the case of logophoric pronouns. If a logophor like *yè* is an overt counterpart of PRO, then it is expected that it too is obligatorily read *de se*. To date, there has been no semantic fieldwork on Ewe to check whether this conjecture is correct. However, there is some preliminary evidence that logophoric pronouns are obligatorily interpreted *de se* in the languages Bafut (Kusumoto 1998), Yoruba (Anand 2006), and Tangale (Haida 2009).<sup>3</sup> Despite this still rather incomplete picture of the empirical landscape, expressions of confidence that logophors are obligatorily interpreted *de se* in Ewe and in other languages are pervasive in the literature on attitude reports (Heim 2001, 2002; Schlenker 1999; Stephenson 2007b, 2010; von Stechow 2002, 2003). Section 3 of this paper provides data elicited from five native Ewe speakers that suggest that the conjecture is in fact incorrect—at least so far as Ewe is concerned. We show that despite the distributional similarities between *yè* and PRO, *yè* displays ambiguity between a *de se* and a *de re* reading. For example, the following sentence is judged true in the scenario we have been considering.

- (9) John be *yè* le cleva.  
 John say LOG COP clever  
 ‘John said that he was clever.’

The idea that a pronoun that obligatorily occurs in the scope of an attitude predicate and denotes the attitude holder is a *de se* expression has its roots in a philosophical tradition that precedes both linguistic work on the semantics of *de se* attitude reports and the seminal work of Clements (1975) on logophoric pronouns in Ewe. Castañeda famously postulated a pronoun *he\** which could occur in a configuration such as the following.

- (10) The Editor of *Soul* knows that *he\** is a millionaire.  
 (Castañeda 1968, p. 440, ex. 3)

Sentence (10) is taken to report an attribution of self-knowledge to the Editor of *Soul*, with Castañeda stipulating that “*he\** is used to attribute, so to speak, implicit indexical references to the Editor of *Soul*; that is, if the Editor were to assert what, according to... [(10)]... he knows, he would use the indicator *I*, where we, uttering... [(10)] ... have used *he\**” (Castañeda 1968, p. 441). Of course, if the

<sup>3</sup> Descriptions of logophoric elements that do not explicitly address the question of *de se* interpretation include Clements (1975) and Orita (2009) on Ewe; Clements (1975) and Hagège (1974) on Mundung; Frajzyngier (1985) on Mupun; Hyman and Comrie (1981) on Gokana; Thomas (1978) on Engenni; Hyman (1979) on Aghem; Voorhoeve (1980) on Ngwo; and Deal and O’Connor (2010) on Northern Pomo. In Sect. 7.2 we place our Ewe data in the broader context of what is known about logophoric pronouns in other languages.

Editor is in a position to say, “I am a millionaire,” then his knowledge that he is a millionaire is an attitude *de se*.

The unearthing of logophoric pronouns was taken as evidence that Castañeda’s *he\** exists after all (Schlenker 1999, 2003). Aside from the resemblance of these pronouns to PRO, the temptation to assume that they are *de se* elements was perhaps made more acute by the fact that Castañeda invoked *he\** as a means not only of indicating that the pronoun takes the attitude holder as its antecedent, but also of indicating that the reported attitude is about the self, accessed from a first personal point of view. But notice that there is no a priori reason to think that these two properties are necessarily correlated. In principle, there could be a pronoun that picks out the bearer of the attitude reported by the sentence in which it occurs, but which need not require that the attitude holder thinks of herself in a first personal way. We will show that the logophoric pronoun in Ewe is such a pronoun, and present an account that reconciles the distribution of *yè* with its ability to be read *de re*.

We proceed as follows. Section 2 presents some theoretical background concerning reports of attitudes *de se* and *de re*. Section 3 lays out our data concerning the distribution of *yè*, and Sect. 4 presents our findings about how *yè* is interpreted. In Sect. 5 we develop an account that reconciles the distribution of *yè* with its ability to be construed *de re*, and then in Sect. 6 we address a possible objection to our approach. Consequences of the proposal for theories concerning obligatorily controlled PRO and for our understanding of logophoricity are discussed in Sect. 7. This section also shows that our approach provides a solution to a long-standing puzzle concerning binding-theoretic effects with *de re* reflexives discussed by Heim (1994) and Sharvit (2011). Section 8 concludes the paper.

## 2 Theoretical background

This section presents background on the semantics of attitude reports. Section 2.1 describes a widely accepted treatment of reports of attitudes *de se*, namely that of Chierchia (1990), with particular attention to the interpretation of obligatorily controlled PRO. Given the observations in the Introduction concerning the distributional similarities between PRO and logophoric pronouns, this provides an opportunity to present an application of Chierchia’s analysis of control to attitude reports with logophoric pronouns (Heim 2002; von Stechow 2002, 2003). This then enables us to describe more precisely the theoretical basis for the conjecture that logophoric pronouns are unambiguously *de se* elements. In Sect. 2.2, we turn our attention to *de re* construals of DPs in the scope of attitude predicates, and describe the view of such construals developed by David Kaplan and David Lewis. Section 2.3 is devoted to a discussion of a particular implementation of this view, due to Percus and Sauerland (2003a). Section 2.4 discusses the overall picture of the syntax and semantics of attitude reports that emerges from these proposals, and identifies consequences for the analysis of *yè*.

## 2.1 The analysis of de se pronouns: the case of PRO

How do de se construals arise? Following Chierchia (1990), one prominent approach is to posit an individual abstractor in the left periphery of the embedded clause, which binds the pronoun.<sup>4</sup> Consider (5) again, repeated here as (11), which we have seen is interpreted de se:

(11) John claimed [PRO to be clever].

Following Lewis (1979), Chierchia proposed that the sentence reports John's self-ascription, in the form of a speech act, of the property of being clever. This is implemented via an individual abstractor in the left edge of the control complement:

(12) [<sub>CP1</sub> λw<sub>1</sub> [w<sub>1</sub> John claimed [<sub>CP2</sub> λx<sub>2</sub>λw<sub>3</sub> [w<sub>3</sub> PRO<sub>2</sub> to be clever]]]]

We assume that Logical Forms incorporate abstraction operators that bind coindexed variables of the appropriate type in their scope. Root clauses always bear an abstractor over worlds in their left periphery, so that sentence meanings are functions from worlds to truth values.<sup>5</sup> The crucial aspect of Chierchia's analysis that (12) illustrates is that PRO is bound by a local individual abstractor. To show that this predicts that PRO is construed de se, we display below the lexical entry of *claim*, followed by the interpretation that the semantic rules assign to the LF in (12), working bottom up from the embedded clause.

(13)  $\llbracket \text{claim} \rrbracket^{c:g} = \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda x_e \lambda w_s. \forall \langle w', y \rangle \in \mathbf{claim}_{x,w}, P(y)(w')$   
 where  $\mathbf{claim}_{x,w} = \{ \langle w', y \rangle : \text{what } x \text{ claims in } w \text{ is true in } w' \text{ and } x \text{ identifies herself as } y \text{ in } w' \}$

(14) a.  $\llbracket \text{CP2} \rrbracket^{c:g} = \lambda x \lambda w. x \text{ is clever in } w$   
 b.  $\llbracket \text{CP1} \rrbracket^{c:g} = \lambda w. \forall \langle w', y \rangle \in \mathbf{claim}_{\text{John},w}, y \text{ is clever in } w'$

Notice that the semantics for attitude predicates assumed here characterizes the content of a mental attitude or speech act not as a set of worlds, as on a traditional Hintikka semantics for attitude reports (Hintikka 1969), but as a set of world-individual pairs. The verb *claim*, for instance, is a quantifier over elements of the set of *claim*-alternatives  $\langle w', y \rangle$  such that it is compatible with what the attitude holder (the subject) says for her to be *y* in *w'*. This conception of an attitude predicate as a quantifier over elements that are more fine-grained than worlds ensures that a property expressed by the verb's clausal complement is of suitable

<sup>4</sup> An alternative is to treat control predicates as quantifiers over evaluation indices, posit an individual coordinate of the evaluation index in addition to the world coordinate, and stipulate that PRO has this coordinate as its semantic value. For context-shifting approaches such as that of Anand and Nevins (2004), the individual coordinate is the author of a shifted context; for Stephenson (2007b, 2010), it is the 'judge' parameter associated with the interpretation of predicates of personal taste and epistemic modals.

<sup>5</sup> Technically, abstractors over time intervals are also needed (Abusch 1997), but we ignore tense in this paper.

type to serve as its first argument, thereby making it possible to implement the Lewis–Chierchia view that an agent  $\alpha$  bears an attitude *de se* towards a content  $\phi$  just in case  $\phi$  is a property self-ascribed by  $\alpha$ . According to (14), (12) reports that John ascribes the property of being clever to the individual  $y$  that he designates as himself at each of the worlds  $w'$  compatible with the content of his speech act. Since it is stipulated in the definition of *claim*-alternatives in (13) that such an individual  $y$  is a candidate of the attitude holder's for himself,  $y$  must necessarily be an individual that the attitude holder would be prepared to refer to in a first personal way. Consequently, in a scenario where John attributes cleverness to the individual satisfying the description 'the author of this paper', failing to realize that in doing so he attributes cleverness to himself, (12) is correctly predicted to be false.

We have just seen that a theory where PRO is obligatorily abstracted over by an operator in embedded C correctly predicts that when the control predicate is attitudinal, PRO is necessarily interpreted *de se*.<sup>6</sup> A further virtue of this proposal is that it also predicts that in such a configuration, PRO is interpreted in the unmarked case as picking out the attitude holder.<sup>7</sup> That this is correct is exemplified by (15).

(15) John<sub>i</sub> claimed to Mary<sub>j</sub> [PRO<sub>i/\*j</sub> to be cleverer than her<sub>j</sub>/\*him<sub>i</sub>]

With a speech act verb such as *claim*, the attitude holder is the agent of the speech act—John, in (15), not Mary. To see how the inability of Mary to serve as the controller of PRO follows from the semantics in (14), consider that (14) says that for all of John's *claim*-alternatives  $\langle w', y \rangle$ ,  $y$  is clever in  $w'$ . If John is in his right mind, such a  $y$  is just John himself (or John's counterpart in  $w'$ ). Consequently, it is John, and not Mary, who is ascribed cleverness. This captures our intuitions about which individual serves as the antecedent of PRO, without having to postulate a syntactic module dedicated to identification of the controller.

Heim (2002) and von Stechow (2002, 2003) noticed that this technology makes available a straightforward account of the distribution of logophoric pronouns such as *yè*. Recall that logophors (i) obligatorily occur in the scope of an attitude predicate and (ii) necessarily pick out the attitude holder. Heim (2002) and von Stechow (2002, 2003) follow Chierchia in assuming that an attitude verb introduces an individual abstractor in the left periphery of the clause it embeds. Any pronoun that is bound by this operator, such as PRO, is expected to be obligatorily construed *de se*. They propose that logophoric pronouns and PRO are both required to be bound by the abstractor. This is rendered by appealing to an uninterpretable feature [log] on the logophor and on PRO, which must be checked under binding by an

<sup>6</sup> Notice that this is compatible with there being non-attitudinal control predicates such as *force*, which quantifies over worlds rather than over world-individual pairs. Such verbs can also be given a semantics whereby they take an argument of property type. This is an advantage of Chierchia's approach over accounts such as Anand and Nevins (2004) or Stephenson (2007b, 2010) that treat PRO as picking out the 'author' or 'judge' coordinate of the world-individual pairs quantified over by the control predicate (see footnote 4).

<sup>7</sup> In a case where the attitude holder puts herself in the shoes of someone else, PRO picks out that individual, as in *John imagined being Napoleon*. This too is predicted by Chierchia's theory; the individual coordinates of John's *imagine*-alternatives are Napoleon rather than John.

operator bearing the same feature. An attitude predicate passes [log] to the individual abstractor that it introduces in embedded C, thereby enabling this feature to be checked on PRO or the logophor. This is illustrated for PRO and  $yè$  in (16).

- (16) a.  $[_{CP1}\lambda w_1 [w_1 \text{ John claimed}_{[log]} [_{CP2}\lambda x_2[_{log}]\lambda w_3 [w_3 \text{ PRO}_{2[log]} \text{ to be clever}]]]]]$   
 b.  $[_{CP1}\lambda w_1 [w_1 \text{ John claimed}_{[log]} [_{CP2}\lambda x_2[_{log}]\lambda w_3 [w_3 yè_{2[log]} \text{ was clever}]]]]]$

This idea provides an elegant treatment of the distribution of logophors, and arguably captures the parallel between these elements and PRO.<sup>8</sup> It is correctly predicted that  $yè$  must occur in the scope of an attitude verb: the feature [log] requires  $yè$  to be bound by (the abstractor introduced by) an attitude predicate. Furthermore, since  $yè$ , like PRO, is abstracted over, the clause in which it occurs is interpreted as expressing a property whose individual argument is a variable over ‘epistemic alternatives’ of the attitude holder—the attitude holder’s candidates for herself. This correctly predicts that  $yè$  takes an attitude holder as its antecedent; the argumentation is analogous to that which we have already seen with PRO.

Finally, the Heim–von Stechow view predicts that  $yè$  is obligatorily construed de se. For example, since the embedded clause in (16b) expresses the same property as the control complement in (16a), the two sentences have identical truth conditions. Given the elegant manner in which the Heim–von Stechow view captures the distribution of logophors, it was not unreasonable to suppose that this prediction would be borne out. It is all the more surprising, then, to discover that  $yè$  can in fact be construed de re. Before we turn to the data that demonstrate this, we shall introduce some theoretical background concerning de re construals. Since the goal of this paper is to reconcile the availability of the de re construal of  $yè$  with its distribution, this technology will play an important role in our analysis.

## 2.2 Background on de re belief

This section presents the traditional view on the truth conditions of de re belief reports (Kaplan 1968; Lewis 1979). A compositional semantics is given in Sect. 2.3. Consider (17).

- (17) John<sub>i</sub> believed that he<sub>i</sub> was clever.

Suppose again that John has said, “The author of this paper is clever,” unaware that in doing so he ascribes cleverness to himself. Suppose also that his utterance is a sincere expression of one of his beliefs. There is a reading of (17) upon which it is true in this scenario; this is the analogue of our observation concerning overt pronouns embedded in the scope of *claim*, presented in the Introduction. On this

<sup>8</sup> However, if attitude verbs are the only operators that bear [log], it may be undesirable to posit this feature for PRO, given that not all control predicates are attitudinal (see footnote 2). In this paper, we pursue the idea that  $yè$  bears [log], but set aside the question of how the requirement that PRO be abstracted over is implemented. Further applications of the [log] feature are found in Anand (2006) and von Stechow (2002, 2003).



reading, *he* is construed de re. The goal of this section is to state the truth conditions of reports of beliefs de re such as (17).

In the relevant scenario, John believes that the author of the paper that he read is clever. Furthermore, John's belief is about himself in virtue of the fact that John is the author of the paper that he read. These circumstances are responsible for the truth of (17). We can model this by identifying the concept associated with the expression *the author of the paper that John read*. This is just that function *f* that maps a world *w* to the individual that wrote the paper that John read in *w*. In the scenario under consideration, *f* has two properties that make it what we shall call a *suitable* concept for the attitude holder John. Firstly, it is *reliable* in that when applied to the actual world it returns the res itself—John in this case. (When applied to other worlds, it may return other individuals, however. This will be the case when it is applied to John's belief worlds, since John does not believe (de se) that he is the author of the paper.) Secondly, it is *acquaintance-based* in that the individual that it returns in a world *w* is the unique individual to whom John bears the acquaintance relation 'read the paper of' in *w*. On its de re reading, (17) involves existential quantification over concepts that are suitable for the attitude holder John with respect to the res John, where suitability is defined as in (18).<sup>9</sup>

(18) *Suitable concept* (first version)

An individual concept *f* is *suitable* for an attitude holder *x* in *w* with respect to a res *u* iff

- (i)  $f(w) = u$ ; *Reliability*
- (ii) there is an acquaintance relation *R* such that for all worlds *w'* in the domain of *f*, *x* bears *R* uniquely to  $f(w')$  in *w'*. *Acquaintance-based*

The truth conditions of (17) can then be defined as follows.

(19) *Truth conditions of (17)* (first version)

$\llbracket(17)\rrbracket^{c-g} = 1$  in *w* (on its de re reading) iff there is some concept *f* that is suitable for John in *w* with respect to John such that for all worlds *w'* compatible with what John believes in *w*,  $f(w')$  is clever in *w'*.

A problem with (18) and (19) is that they require a treatment of doxastic alternatives (objects compatible with what the attitude holder believes) as worlds. Yet in Sect. 2.1 we pursued the idea that the elements quantified over by attitude verbs—*claim*-alternatives, doxastic alternatives, and so on—are world-individual pairs rather than worlds. This can be addressed by pursuing Lewis's insight that the incorporation of acquaintance relations into the semantics introduces a de se component (Lewis

<sup>9</sup> Intuitively, the 'res' is simply the individual which a de re attitude is about. Because we are concerned with the de re/de se distinction, we focus on examples where the attitude holder and the res are the same individual. This need not be the case, however, as when Ralph believes de re of Orcutt that he is a spy (Quine 1956).

1979). The belief of John's that we are interested in in (17) can be expressed by him as, "The author of the paper that I read is clever." So for any world  $w'$  compatible with what John believes, the concept should pick out the author of the paper that  $y$  read in  $w'$ , where  $y$  is John's doxastic center in  $w'$ . We have:

(20) *Suitable concept* (final version)<sup>10</sup>

An individual concept  $f$  is *suitable* for an attitude holder  $x$  in  $w$  with respect to a res  $u$  iff

- (i)  $f(w, x) = u$ ; *Reliability*
- (ii) there is an acquaintance relation  $R$  such that for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $f$ ,  $y$  bears  $R$  uniquely to  $f(w', y)$  in  $w'$ . *Acquaintance-based*

Notice that acquaintance-based concepts are now functions from world-individual pairs to individuals, rather than from worlds to individuals as before. Here then are the final truth conditions for (17):

(21) *Truth conditions of (17)* (final version)

$\llbracket (17) \rrbracket^{c,g} = 1$  in  $w$  (on its de re reading) iff there is some concept  $f$  that is suitable for John in  $w$  with respect to John such that for all  $\langle w', y \rangle \in \text{Dox}_{\text{John},w}$ ,  $f(w', y)$  is clever in  $w'$ ;

where  $\text{Dox}_{x,w} = \{ \langle w', y \rangle : \text{what } x \text{ believes in } w \text{ is true in } w' \text{ and } x \text{ identifies herself as } y \text{ in } w' \}$

Let us now generalize this to provide truth conditions for reports of beliefs de re.<sup>11</sup>

(22) *Truth conditions for reports of beliefs de re*

For any attitude holder  $x$ , res  $u$  and one-place predicate  $P$ , ' $x$  believes that  $u$  is  $P$ ' is true in  $w$  iff there is some concept  $f$  that is suitable for  $x$  in  $w$  with respect to  $u$  such that for all  $\langle w', y \rangle \in \text{Dox}_{x,w}$ ,  $f(w', y)$  is  $P$  in  $w'$ .

We can then provide the following lexical entry for the de re variant of *believe*:<sup>12</sup>

(23) *De re variant of 'believe'* (first version)

$\llbracket \text{believe}^{\text{de re}} \rrbracket^{c,g} = \lambda x_c \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda y_c \lambda w_s. \exists f: f \text{ is suitable for } y \text{ in } w \text{ with respect to } x \ \& \ \forall \langle w', z \rangle \in \text{Dox}_{x,w}, P(f(w', z))(w')$

<sup>10</sup> A further proviso, which we ignore throughout this paper, is that the acquaintance relation that the attitude holder bears to the res should be sufficiently 'vivid' in the sense of Kaplan (1968).

<sup>11</sup> Although we focus on de re beliefs in this subsection, the semantics in (22) can be generalized to other types of attitude by replacing doxastic alternatives with the appropriate type of attitudinal alternative.

<sup>12</sup> This version will be slightly amended in the next subsection.

Notice that we have treated *de re* belief as a three-place relation between an attitude holder, a *res*, and a property. But in terms of surface syntax, the verb *believe* merely takes a clausal complement, yielding a VP that combines with the subject (the attitude holder). The complement clause contains both the linguistic material that contributes the *res* (a DP) and that which contributes the property that the belief holder ascribes to the *res* (a VP). This gives rise to a well-known compositionality puzzle: how can a Logical Form be generated that ensures that the *res* is fed to *believe* as one of its arguments? One approach is to posit covert movement of the DP that denotes the *res*. This is shown schematically in (24):

(24) [x believes [<sub>res</sub> u] [ $\lambda x_1 t_1$  VP]]

There are well-known difficulties with the covert *res* movement approach (see Anand 2006 and Charlow and Sharvit 2014 for discussion), and we instead adopt a proposal that lets the *res* remain in situ (Percus and Sauerland 2003a). This proposal is presented in the next subsection.

### 2.3 The concept generator approach to attitudes *de re*

We will employ a theory of *de re* attitude ascription based on the notion of a ‘concept generator’ introduced by Percus and Sauerland (2003a) and discussed further in Anand (2006) and Charlow and Sharvit (2014). This is a function that takes a *res* as its argument, and returns a concept with the appropriate properties for it to figure in the calculation of the truth conditions of a *de re* attitude report—one that is acquaintance-based for the attitude holder, returns the *res* itself when applied to the pair consisting of the actual world and the attitude holder, and so on. Concept generators are introduced into the LF by embedding of the DP denoting the *res* in a larger covert constituent (a ‘*resP*’) that contains a variable over concept generators. This variable is abstracted over, as shown schematically below:

(25) John believed [ $\lambda G_1$  [ [<sub>resP</sub>  $G_1$  he] was clever]].

Recall that we have said that belief *de re* has a *de se* component in the sense that the attitude holder’s beliefs concerning the way(s) in which she is acquainted with the *res* are beliefs *de se*: when John believes that the person whose paper he read is clever, he self-ascribes the property of bearing the acquaintance relation ‘read the paper of’ uniquely to some individual who is clever. This is modeled as in Sect. 2.1, with abstractors over individual and world variables in embedded C. This time, the *de se* pronoun that is bound by the individual abstractor is not controlled PRO, but rather a covert pronoun within the *resP*. This pronoun and a bound world variable pronoun serve as the arguments of the concept that is returned when the concept generator variable is fed the *res* as its argument. Recall from the last subsection that the kinds of concepts that we are interested in are functions from world-individual pairs to individuals. The inclusion of covert individual and world pronouns in the *resP* ensures that this constituent contributes an individual—the individual

associated with the concept at each of the world-individual pairs quantified over by the attitude predicate. The complete LF is provided in (26):

$$(26) [\lambda w_1 [w_1 \text{ John}_5 \text{ believed } [\lambda G_2 \lambda x_3 \lambda w_4 [w_4 \text{ }_{\text{resP}} G_2 \text{ he}_5 w_4 x_3] \text{ was clever}]]]].$$

Notice that leaving the *res* in situ lets us analyze *believe* as a two-place predicate—a relation between individuals and functions from concept generators to properties. Concept generators are functions from individuals to concepts, type  $\langle e, \langle s, \langle e, e \rangle \rangle \rangle$ . The complement of *de re believe* is therefore of type  $\langle \langle e, \langle s, \langle e, e \rangle \rangle \rangle, \langle e, \langle s, t \rangle \rangle \rangle$ . Additionally, *believe* is no longer treated as an existential quantifier over concepts that are suitable for the attitude holder with respect to the *res* as in Sect. 2.2, but as an existential quantifier over concept generators that are suitable for the attitude holder, where a concept generator *G* is suitable for *x* just in case for every individual *u* in the domain of *G*, *G*(*u*) is a suitable concept for *x* with respect to *u*. Here is the final version of the lexical entry for *believe*<sup>de re</sup>, along with the definition of suitability of a concept generator for an attitude holder.<sup>13,14</sup>

(27) *De re variant of 'believe' (final version)*

$$\llbracket \text{believe}^{\text{de re}} \rrbracket^{c, g} = \lambda \Pi_{\langle \langle e, \langle s, \langle e, e \rangle \rangle \rangle, \langle e, \langle s, t \rangle \rangle \rangle} \lambda x_e \lambda w_s. \exists G: G \text{ is suitable for } x \text{ in } w \ \& \ \forall \langle w', z \rangle \in \text{Dox}_{x,w}, \Pi(G)(y)(w')$$

(28) *Suitable concept generator (first version)*

A concept generator *G* is *suitable* for *x* in *w* iff for all *u* in the domain of *G*:

- (i)  $G(u)(w, x) = u;$  *Reliability*
- (ii) there is an acquaintance relation *R* such that for all world-individual pairs  $\langle w', y \rangle$  in the domain of *G*(*u*), *y* bears *R* uniquely to  $G(u)(w', y)$  in *w'*. *Acquaintance-based*

<sup>13</sup> This is the standard definition of suitability for concept generators; an amendment is proposed in Sect. 2.4.

<sup>14</sup> Definition (28) treats concept generators as functions from individuals to functions from world-individual pairs to individuals, rather than from individuals to worlds to individuals to individuals as in (27). Since the latter is merely a Schönfinkelized version of the former, this does not present any problems. The advantage of thinking in terms of world-individual pairs when defining suitability is that it lets us conceive of the domain of a function *G*(*u*) as a set of world-individual pairs. We assume the following:

- (i) If *G* is a suitable concept generator for *x* in *w*, then for any *u* in the domain of *G*, the domain of  $G(u) = \langle w, x \rangle \cup \text{ATT}_{x,w};$   
where  $\text{ATT}_{x,w} = \{ \langle w', y \rangle : \text{it is compatible with } x \text{'s mental state or speech act for } w' \text{ to be } w \text{ and } x \text{ identifies herself as } y \text{ in } w' \}$

The notion of attitudinal alternatives  $\text{ATT}_{x,w}$  is just a generalization of the particular types of alternatives quantified over by attitude verbs (*claim*-alternatives, *doxastic* alternatives, etc.). (i) may be too strong: alternatives associated with counterfactual attitudes like *imagine* should possibly be excluded from the domain of the concept, since under counterfactual attitudes *de re* DPs seem to be interpreted with respect to the attitude holder's *doxastic* alternatives rather than her counterfactual alternatives (Ninan 2012, Yanovich 2011).

To show that this LF and semantics yield the truth conditions of a de re belief report without appeal to res movement, we present computations for *John<sub>i</sub> believed he<sub>i</sub> was clever*:

- (29) a.  $[_{CP1} \lambda w_1 [ w_1 \text{ John}_5 \text{ believed } [_{CP2} \lambda G_2 \lambda x_3 \lambda w_4 [w_4 [_{\text{resP}} G_2 \text{ he}_5 w_4 x_3] \text{ was clever}]]]]]$ .
- b.  $[[_{CP2}]^{c:g} = \lambda G \lambda x \lambda w. G(\text{John})(w)(x) \text{ was clever in } w$
- c.  $[[_{CP1}]^{c:g} = \lambda w. \exists G: G \text{ is suitable for John in } w \ \& \ \forall \langle w', y \rangle \in \text{Dox}_{\text{John},w},$   
 $[[_{CP2}]^{c:g}(G)(w')(y) = \lambda w. \exists G: G \text{ is suitable for John in } w \ \& \ \forall \langle w', y \rangle \in$   
 $\text{Dox}_{\text{John},w}, G(\text{John})(w')(y) \text{ is clever in } w'.$

The sentence is true just in case there is some suitable concept generator for John in *w* such that at each of John’s doxastic alternatives  $\langle w', y \rangle$ , the individual that the concept generator maps John to at  $\langle w', y \rangle$  is clever in *w'*. The existential quantification is witnessed by a concept generator that maps John to a concept *f* such that (i)  $f(w, \text{John}) = \text{John}$  and (ii) for every  $\langle w', y \rangle$  in the domain of *f*,  $f(w', y)$  is the unique individual whose paper *y* read in *w'*. Consequently, *John<sub>i</sub> believed he<sub>i</sub> was clever* is predicted to be true in the relevant scenario.

The concept generator approach has the virtue of permitting the res to be interpreted in situ, although this comes at the cost of positing additional covert material. A consideration of the advantages of this approach over one based on res movement is beyond the scope of this paper; empirical arguments are provided in Charlow and Sharvit (2014). In the next subsection, we consider some consequences of the approaches to de se and de re construal discussed here, in relation to predictions concerning logophoric pronouns.

### 2.4 Consequences for the LFs of attitude reports

Charlow and Sharvit (2014, fn. 24) notice the following problem. Suppose we consider a pronoun *pro* that occurs in the complement clause of an attitude predicate. In such a configuration, a pronoun may be bound by an individual abstractor, as in (30), or it may be embedded in a resP, as in (31).

(30)  $[\alpha \dots V_{\text{att}} \dots [\lambda x_i \dots [ \dots pro_i \dots ]]]$

(31)  $[\alpha \dots V_{\text{att}} \dots [\lambda G_j \dots [ \dots [_{\text{resP}} G_j pro \dots ] \dots ]]]$

In principle, it seems that there is nothing to prevent the syntax from generating a ‘hybrid’ of these two structures, where *pro* is both abstracted over and embedded in a resP:

(32)  $[\alpha \dots V_{\text{att}} \dots [\lambda G_j \lambda x_i \dots [ \dots [_{\text{resP}} G_j pro_i \dots ] \dots ]]]$

This should amount to embedding of a *de se* pronoun in a larger constituent that is construed *de re*. Charlow and Sharvit show that this generates unattested truth conditions for a sentence such as (33a), where the LF under consideration is (33b).

- (33) a. Sue<sub>i</sub> believes she<sub>i</sub> is a bore.  
 b. [<sub>CP1</sub>λw<sub>1</sub> [ w<sub>1</sub> Sue believes [<sub>CP2</sub>λG<sub>2</sub>λx<sub>3</sub>λw<sub>4</sub> [w<sub>4</sub> [<sub>resP</sub> G<sub>2</sub> she<sub>3</sub> w<sub>4</sub> x<sub>3</sub>] is a bore]]]]].

They consider the following situation. Sue believes that she is Mary; thus at each of Sue's doxastic alternatives  $\langle w', y \rangle$ ,  $y = \text{Mary}$ . (33b) is then predicted to be true in this situation just in case there is a concept generator  $G$  that is suitable for Sue such that at each of Sue's doxastic alternatives  $\langle w', y \rangle$ ,  $G(\text{Mary})(w')(y')$  is a bore in  $w'$ . Suppose in addition that Sue has met the woman who lives at 17 Quincy St. and formed the belief that she is a bore, but that unbeknown to her, that woman is in fact Mary. Then there is a suitable concept generator that witnesses the existential quantifier—namely, one that maps Mary to the concept associated with the description, 'the woman who lives at 17 Quincy'. Thus there should be a reading of (33a) on which it is true, even if Sue believes *de se* that she is not a bore. But there is no such reading.

Matters are no better if one adopts a theory of world-bound individuals, according to which no individual inhabits more than one world.<sup>15</sup> From such a theory it follows that if a pronoun is interpreted as a variable over epistemic alternatives of the attitude holder, then its semantic value ranges over individuals that inhabit not the actual world, but rather the attitude holder's belief worlds (say). There should be no suitable concept generator with such individuals in its domain, since any concept that a concept generator maps such individuals to will fail to be reliable and acquaintance-based: together these two conditions imply that the attitude holder must be acquainted with her epistemic alternatives in the actual world, which in turn requires her epistemic alternatives to be inhabitants of the actual world.

Nor is it obvious how to constrain the syntax in a principled fashion to prevent generation of hybrid *de se*–*de re* LFs. One cannot simply stipulate that a bound variable expression cannot be embedded in a *resP*: Charlow and Sharvit (2014) argue convincingly that the concept generator technology is needed to account for *de re* readings of quantifiers, where the trace of a QR-ed phrase is embedded in a *resP* as shown schematically in (34).

- (34) [Mary thinks [λG<sub>1</sub> [every linguist λx<sub>2</sub> [<sub>resP</sub> G<sub>1</sub> t<sub>2</sub>] is smart]]].

In fact, Charlow and Sharvit point out that it is necessary to permit *de se* pronouns to be embedded in *resPs* in order to account for cases involving multiple attitude predicates:

<sup>15</sup> I am grateful to Irene Heim for alerting me to this. The proposed solution is based on a suggestion from her.

(35) Sue thinks John believes she's a total bore.

(Charlow and Sharvit 2014, p. 39, fn. 25)

On a natural reading of (35), *she* is construed de se with respect to Sue's belief state, but de re with respect to John's. The LF should thus be as in (36). (We ignore the complication that *John* is also de re.)

(36)  $[_{CP1} \lambda w_1 [_{w_1} \text{ Sue thinks } [_{CP2} \lambda x_2 \lambda w_2 [_{w_2} \text{ John believes } [_{CP3} \lambda G_4 \lambda x_5 \lambda w_6$   
 $[_{w_6} [_{\text{resP}} G_4 \text{ she}_2 w_6 x_5] \text{ is a total bore}]]]]]]]$ .

It seems then that hybrid de se–de re LFs should only be ruled out when the pronoun and the concept generator variable are bound from operators in the left periphery of the same minimal clause. Charlow and Sharvit leave this apparent overgeneration problem as an open issue.

Notice though that there would be no overgeneration if the definition of suitability were amended to yield correct predictions for cases where the concept generator takes as its argument a variable that ranges over the attitude holder's candidates for herself. If so, then there would be no need to constrain the syntax in such a way as to rule out hybrid de se–de re LFs. This is the approach that will be pursued in this paper. Since as it stands the definition of suitability does not ensure that concept generators handle epistemic alternatives correctly, we can modify it in such a way that concept generators treat epistemic alternatives as a special case. Our strategy will be to formulate a revised definition that ensures that the following holds:

(37) *New constraint on suitability* (first version)

$G$  is a suitable concept generator for  $x$  in  $w$  only if for any individuals  $y$

and  $z$  that are epistemic alternatives of  $x$  in  $w$ ,  $G(y) = G(z)$ ;

where  $y$  is an epistemic alternative of  $x$  in  $w$  iff there is some  $w'$  such that it is compatible with  $x$ 's mental state or speech act in  $w$  for  $w'$  to be  $w$  and  $x$  identifies herself as  $y$  in  $w'$ .

A simple way to guarantee (37) is to pick some individual  $u$  that stands in a systematic relation to each of the attitude holder's epistemic alternatives  $y$ , and stipulate that for any such  $y$ ,  $G(y) = G(u)$ . An excellent candidate for this individual is the attitude holder herself (since any  $y$  then bears the 'is an epistemic alternative of' relation to  $u$ ). We have:

(38) *New constraint on suitability* (final version)

$G$  is a suitable concept generator for  $x$  in  $w$  only if for any individual  $y$  such that  $y$  is an epistemic alternative of  $x$  in  $w$ ,  $G(y) = G(x)$ .

This requires the following disjunctive definition of suitability for concept generators:

(39) *Suitable concept generator* (final version)

A concept generator  $G$  is *suitable* for  $x$  in  $w$  iff for all  $u$  in the domain of  $G$ :

- (i) either (a)  $G(u)(w, x) = u$ , or (b)  $u$  is an epistemic alternative of  $x$  in  $w$  and  $G(u)(w, x) = x$ ; *Reliability*
- (ii) there is an acquaintance relation  $R$  such that: *Acquaintance-based*
  - (a) for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ ,  $y$  bears  $R$  uniquely to  $G(u)(w', y)$  in  $w'$  and
  - (b) if  $u$  is an epistemic alternative of  $x$  in  $w$ , then for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ ,  $y$  bears  $R$  uniquely to  $G(x)(w', y)$  in  $w'$ .

We assume a theory of world-bound individuals, where no individual inhabits more than one world. This ensures that for any individual in the domain of a suitable concept generator, exactly one of the disjuncts in clause (i) applies. To see this, notice that given (ii.a), any individual  $u$  of which (i.a) is true is such that  $x$  bears some acquaintance relation uniquely to  $u$  in  $w$ . This entails that such a  $u$  is a world-mate of  $x$ . Furthermore, any individual  $u$  of which (i.b) is true is an epistemic alternative of the attitude holder  $x$ , and therefore not a world-mate of  $x$ , but rather an inhabitant of some world  $w'$  compatible with  $x$ 's mental state or speech act. Since no individual can at once be a world-mate of  $x$  and not a world-mate of  $x$ , it follows that for each element of the domain of the concept generator, either the first or the second disjunct of (i) applies, but not both.<sup>16</sup> To see that (39) ensures that the constraint on suitability in (38) holds, notice that (ii) entails that if  $G$  is suitable for  $x$  in  $w$ , then for any epistemic alternative  $u$  of  $x$ ,  $G(u)(w', y) = G(x)(w', y)$ , for every element of the domain of  $G(u)$  and  $G(x)$ .<sup>17</sup>

The proposal is that when a concept generator is fed a variable over the attitude holder's epistemic alternatives, this argument is overwritten with the attitude holder itself. This mimics *de re* construal with the attitude holder as *res*, predicting that a pronoun bound by an attitude verb and embedded in a *resP* is read *de re*, with the attitude holder as antecedent.

Our proposal places the burden of dealing with hybrid *de se*–*de re* configurations on the semantics, in the form of an amendment to the theory of concept generators, rather than on the syntax. How successful it is will depend on whether we can find evidence that there are such configurations, and that they receive the predicted *de re*

<sup>16</sup> To see what sort of trouble could arise if we did not assume a theory of world-bound individuals, consider a case like Charlow and Sharvit's except that Sue has not one but two candidates for herself: her epistemic alternatives are Mary and Polly. If individuals could inhabit more than one world, there could be a suitable concept generator  $G$  for Sue in  $w$  such that  $G(\text{Mary})(w, \text{Sue}) = \text{Mary}$  and  $G(\text{Polly})(w, \text{Sue}) = \text{Polly}$  (by (i.a)). Such a concept generator would have to map Mary and Polly to distinct concepts - one that returns Mary in the actual world, and another that returns Polly. Yet unless the embedded clause contains more than one distinct DP, each construed *de re*, a *de re* belief should be mediated by a single concept that the attitude holder has of a single individual, not by multiple concepts that she has of multiple individuals.

<sup>17</sup> Clause (i.b) of (39) is then strictly speaking redundant; how reliability applies to epistemic alternatives could be deduced from (ii) given the proviso that if  $u$  is a world-mate of  $x$  in  $w$ , then  $G(u)(w, x) = u$ . (We assume that the domain of a concept generator includes only world-mates and epistemic alternatives of the attitude holder.) We have included (i.b) to enable the reader to see at a glance how reliability works for epistemic alternatives.



interpretation. Such a configuration will in many cases be indistinguishable from a simpler one where the pronoun remains free and is embedded in a resP; indeed we might speculate that economy considerations dictate that a pronoun that can be free will never occur in a hybrid de se—de re configuration. But this configuration will be identifiable if there are pronouns that are obligatorily bound in the scope of an attitude predicate, and which can be construed de re. We will argue that the logophoric pronoun in Ewe is precisely such an element; the configuration that permits it to be interpreted de re is shown schematically in (40).

(40) [ $\alpha$  ...  $V_{att[log]}$  ... [ $\lambda G_j \lambda x_i[log]$  ... [ ... [ $resP G_j y e_i[log]$  ...] ...]]]

By maintaining Heim and von Stechow's idea that  $y e$  bears a feature that must be checked under binding by an attitude verb, this proposal reconciles the de re interpretation of  $y e$  with its distribution. One question that it gives rise to is why obligatorily controlled PRO cannot be construed de re—why can it not also be embedded in a resP? In Sect. 7.1, we propose that only logophoric elements that can take a long-distance antecedent when embedded below more than one attitude verb can be construed de re. This is because in such a configuration, such elements are necessarily interpreted de re with respect to the most local attitude holder. Since embedding of a pronoun in a resP involves additional covert structure, economy considerations dictate that it is a last resort option. Consequently, elements such as PRO that can only take a local antecedent are obligatorily interpreted de se.

In Sect. 7.2, we show that an appealing aspect of our proposal is that it can be applied to puzzles concerning binding of de re reflexives (Heim 1994; Sharvit 2011). But first, let us take a closer look at the Ewe data.

### 3 Introducing the Ewe data

#### 3.1 Background on the consultants and elicitation technique

Ewe is a Niger-Congo language spoken in Ghana and Togo. Our data were collected in a series of elicitation sessions with five bilingual Ewe/French speakers (henceforth 'Consultants 1–5'). We worked with speakers of two dialects: Mina, spoken in Togo's capital city Lomé, and so-called 'pure Ewe', spoken in Ghana and other parts of Togo. Consultants 1, 2, and 5 are Mina speakers, and Consultants 3 and 4 are pure Ewe speakers.

Consultant 1 was born in Lomé and moved to the U.S. at the age of twelve. The language of instruction during his education in Togo was French, but Ewe was the language spoken in the home, and he still speaks it regularly with his parents. Elicitation sessions with Consultant 1 took place in Cambridge, Mass, roughly every two weeks over a period of about a year. After this period, a smaller number of judgments were elicited via email for clarification or for testing of predictions.

Elicitation work with Consultants 2–5 was held over Skype in a series of between 2 and 8 one-hour sessions. These were also occasionally supplemented with follow-up questions over email. At the time of this work, Consultants 2–4 had been living outside Togo for six or seven years (in Scotland, India, and Belgium respectively).

They continue to speak Ewe regularly with family or friends. Consultant 5 is our only Ewe speaker still living in Togo.

Both in-person elicitation sessions and those held over Skype were recorded as audio files; these recordings were supplemented with typed notes. For Skype appointments, the facility to type instant messages while talking was used for displaying test sentences, in order to mitigate any risk of misunderstanding. For some Skype calls the video function was used, depending on the preferences of the consultant and the quality of the internet connection.

The data collected took the form of binary judgments of grammaticality and of truth/falsity relative to scenarios described by the researcher. The consultants' spontaneous comments about the reasons for their answers were also noted down.

Due to the subtlety of judgments bearing on the *de se/de re* distinction, the ideal approach is to repeat core *de re* scenarios across sessions, with judgments of truth/falsity of particular attitude reports relative to these scenarios being elicited afresh each time, either with identical sentences to those tested in previous sessions or with a different attitude verb. This strategy was employed in the long-term work with Consultant 1; his judgments concerning attitude reports used in these scenarios were highly stable across the one-year period of research. It was also possible to adopt this strategy, though to a lesser extent, in the 7 or 8 sessions with Consultants 2–4. Since there were only 2 sessions with Consultant 5, it was not possible to test the core semantic judgments with him across more than one session.

### 3.2 Basic distributional data concerning *yè*

The pioneering work of Clements (1975) established several generalizations concerning the distribution of *yè*.<sup>18</sup> These are mostly corroborated by our findings. The occurrence of *yè* in the scope of attitude verbs is a robust fact. Thus the following examples are grammatical.<sup>19</sup>

- (41) a. Kofi *be* *yè* *dzo*.  
 Kofi say LOG leave  
 'Kofi<sub>i</sub> said that he<sub>i/\*j</sub> left.'
- b. E *koudron be yè la va*.  
 3SG dream COMPL LOG INGR come  
 'He/she<sub>i</sub> dreamed that he/she<sub>i/\*j</sub> will come.'
- c. John *bòu be yè nyi honvi*.  
 John think COMPL LOG COP stupid  
 'John<sub>i</sub> thinks that he<sub>i/\*j</sub> is stupid.'

<sup>18</sup> More recent fieldwork on *yè* is reported in Orita (2009). Orita did not investigate whether the logophor is obligatorily construed *de se*, however.

<sup>19</sup> The data in (41) suggest that *be* can be used as a verb meaning 'say' (41a), and as a complementizer (41b, c). On the other hand, Consultant 1's intuition about cases of the former type was that a verb meaning 'say' has been deleted, and that *be* means roughly 'that' in these cases, too. We have not investigated the properties of the two uses of *be* in sufficient depth to justify one analysis over the other.

By contrast, *yè* cannot be used with third person reference in a simple matrix clause; the plain pronoun *e* must be used instead.<sup>20</sup>

- (42) \*Yè/e dzo.  
 LOG/3SG leave  
 ‘He/she left.’

A more surprising finding is that for Consultants 2, 4, and 5, *yé* can be licensed if it is a component of the complex reflexive *yè dɔkui*, including in non-attitudinal environments:<sup>21</sup>

- (43) %Kofi ponu na yè dɔkui.  
 Kofi talk PRP LOG REFL  
 ‘Kofi talked to himself.’

For these speakers, the distribution of *yè* is somewhat broader than traditionally assumed for logophoric pronouns. One way to account for this is to follow Kratzer (2009) in positing a feature [reflexive] on the functional head *v*. It seems that for the speakers for whom (43) is acceptable, *yè* can be born with either [log] or [reflexive]. If the latter, then this feature is checked under binding by *v*, and is a licit component of a complex reflexive.<sup>22</sup>

Additionally, (44a) shows that when the embedding verb is not an attitude predicate, *yè* is unavailable. The sentence providing the intended meaning is given in (44b).<sup>23</sup>

<sup>20</sup> Intriguingly, use of *yè* as a first person pronoun is marginally acceptable for Consultant 5:

- (i) Yè le dzo.  
 LOG TNS leave  
 ‘I left.’  
 (ii) ?/\*Yè dzo.  
 Intended: ‘I left.’

It is tempting to think of this as evidence that *yè* is an optionally shifting indexical in Consultant 5’s dialect. However, one would then have to explain why *yè* is unlike typical shifting indexicals, first in being only marginally acceptable in unembedded contexts and second in admitting a *de re* reading. We leave this matter to future research.

<sup>21</sup> We use ‘%’ to indicate acceptability for a proper subset of our consultants.

<sup>22</sup> Consultant 2 did not find *yé* acceptable in reflexive environments in every case that we tried. We leave it to future research to investigate the conditions governing the occurrence of *yé* as part of a complex reflexive.

<sup>23</sup> For Consultant 5, *wɔ* is not an acceptable gloss for English ‘cause’. He offered instead *yena*, and judged the counterpart of (44a) with this verb unacceptable.

- (44) a. \*Kofi wə be yè dzo.  
           Kofi do COMPL LOG leave  
       b. Kofi wə be e dzo.  
           Kofi do COMPL 3SG leave  
           ‘Kofi caused himself to leave.’

Clements noted that *yè* may occur in an unembedded sentence if the sentence preceding it contains an attitude predicate, in which case it must denote the attitude holder associated with the predicate in this earlier sentence. Our data support this claim:

- (45) Kofi koudrin be yè bidzi. Marie zu yè.  
       Kofi dream COMPL LOG angry Mary insult LOG  
       ‘Kofi<sub>i</sub> dreamed that he<sub>i</sub> was angry. Mary insulted him<sub>i</sub>.’

Note that this configuration has semantic consequences: our consultants interpret *yè* in the second sentence as occurring in the scope of an attitude, by drawing an inference either that the insult took place in the dream or that the discourse reports Kofi describing the dream to Mary.

Our data also verify Clements’ claim that logophors are used “to distinguish reference to the individual whose speech, thoughts, or feelings are reported or reflected in a given linguistic context, from reference to other individuals” (Clements 1975, p. 141)—the attitude holder in our terms. Revisiting the data in (41), we thus see that *yè* necessarily refers to the reported speaker, dreamer or thinker. This pattern extends to attitude reports involving predicates that take two nominal arguments. In (46) *yè* necessarily refers to the reported speaker rather than the addressee.

- (46) Kofi gblon na Marie be yè dzo.  
       Kofi say PRP Mary COMPL LOG leave  
       ‘Kofi told Marie that he/\*she left.’

Clements also observed that when *yè* occurs below multiple attitude predicates, it can refer to any of the higher attitude holders; thus the requirement that *yè* find a higher antecedent appears not to be restricted by locality. Our data corroborate this finding:

- (47) Marie be Kofi xəse be yè na yè cadeau.  
       Mary say Kofi believe COMPL LOG give LOG gift  
       (i) ‘Mary said that Kofi believed that she gave him a gift.’  
       (ii) ‘Mary said that Kofi believed that he gave her a gift.’

*Yè* preferentially occurs with a third person antecedent:<sup>24,25,26</sup>

(48) M xɔse be \*yè/m nyi sukuvi nyoe de.  
1SG believe COMPL LOG/1SG COP student good ART  
Intended: ‘I believe that I am a good student.’

(49) O xɔse be \*yè/o nyi sukuvi nyoe de.  
2SG believe COMPL LOG/2SG COP student good ART  
Intended: ‘You believe that you are a good student.’

This is a different finding from that reported by Clements, which was that *yè* may have either a second or a third person antecedent. Another point of divergence is that Clements reported that where the plain pronoun is used in the scope of an attitude predicate, it cannot denote the attitude holder. This construal is available for two of our Mina speakers, however (Consultants 1 and 5):

- (50) a. Kofi be e dzo.  
Kofi say 3SG leave  
‘Kofi<sub>i</sub> said that he<sub>i/j</sub> left.’
- b. E koudron be e la va.  
3SG dream COMPL 3SG INGR come  
‘He<sub>i</sub> dreamed that he<sub>i/j</sub> will come.’
- c. John bɔ̀u be e nyi honvi.  
John think COMPL 3SG COP stupid  
‘John<sub>i</sub> thinks that he<sub>i/j</sub> is stupid.’

<sup>24</sup> Consultant 1’s judgments concerning a second person antecedent with *yè* are not uniform. He found (i) acceptable, but only if it reports the addressee’s words faithfully. For instance, (i) is unacceptable in a scenario where the verb used by the addressee was *yi* ‘go’ rather than *dzo*, in which case (ii) should be used instead.

(i) O gblon be yè dzo.  
2SG say COMPL LOG leave  
‘You said that you left.’

(ii) O gblon be o dzo.  
2SG say COMPL 2SG leave  
‘You said that you left.’

We do not have an account of these facts, which suggest that in addition to its use in indirect discourse, a (semi-)quotational use of *yè* may be marginally available.

<sup>25</sup> There is dialect variation in the preferred form of the first and second person pronouns: we find *me* in addition to *m*, and *e* in addition to *o*. Here we use *m* and *o*, which are primarily associated with Mina.

<sup>26</sup> Interestingly, *yè* with a first person antecedent was judged acceptable (if dispreferred) by a sixth speaker, whose intuitions are not reported elsewhere in this paper because we were not able to elicit the crucial semantic judgments from her due to time constraints. This consultant, who is a Mina speaker herself, associated use of *yè* with a first person antecedent with the dialect of Ewe spoken in Atakpamé, to the north of Lomé. It would be worthwhile to investigate this directly with Ewe speakers from this area, since it could potentially falsify the prediction of Schlenker (2003) that logophoric pronouns never occur in the first person.

## 4 The interpretation of *yè*

### 4.1 De re construal of *yè*

The main piece of evidence that *yè* is not obligatorily interpreted de se is that an attitude report with *yè* can truthfully be used to describe a ‘de re’ scenario involving mistaken identity. Considerable care is needed in the elicitation of these judgments and interpretation of the data. Since we are concerned with an ambiguity, a judgment of an attitude report with *yè* as false in a mistaken identity scenario does not constitute conclusive evidence that *yè* lacks the de re reading; it may simply be that the consultant interprets the report with respect to the de se reading. Indeed, for many English speakers, it seems that the de se reading is the preferred interpretation of an ordinary pronoun; as anecdotal evidence, it is common for audience members in talks or classes on the de se/de re distinction to object that they cannot detect the de re reading. Given this background, it is striking to note that four of our five speakers judged the following attitude reports with *yè* as true in mistaken identity scenarios. (Consultant 3 did not share these judgments; we will return to this issue in a moment.)

Our first example is repeated from (9) in the Introduction; further evidence is presented in (52)–(55).<sup>27</sup>

- (51) *Scenario*: John has just found an old paper that he wrote, but he doesn’t realize that he is the author of the paper. He reads it and is impressed by what a good paper it is. He says, “Whoever wrote this paper is clever.”

John be *yè* le cleva.  
 John say LOG COP clever  
 ‘John said that he was clever.’

- (52) a. *Scenario*: John is in the grocery store. He sees a trail of sugar going up and down the aisles. He realizes it must have been made by someone carrying a bag of sugar with a hole in it. He wonders who the shopper with the torn bag of sugar is, so that he can tell him. He thinks that that guy, whoever he is, is stupid. What he doesn’t realize is that the guy with the torn bag of sugar is him!<sup>28,29</sup>

John *bòu* be *yè* nyi honvi.  
 John think COMPL LOG COP stupid  
 ‘John<sub>i</sub> thinks that he<sub>i</sub> is stupid.’

<sup>27</sup> Consultant 2 judged (51) false, but its counterparts with *xɔse* (‘believe’) and *gblon* (‘say’) true. His comments suggest that he may have been interpreting (51) as a (semi-)quotation.

<sup>28</sup> Based on a narrative employed by Perry (1979) to illustrate the de se nature of first person pronouns.’

<sup>29</sup> Consultant 5 had difficulty detecting the de re reading with this case, but detected it with (51) and (54).

- b. *Scenario*: As in (52a), except that John articulates out loud his thought that the shopper with the torn bag of sugar is stupid.  
 John be yè nyi honvi.  
 John say LOG COP stupid  
 ‘John said that he was stupid.’

- (53) a. *Scenario*: ‘We interview John, but while we interview him, a hidden camera photographs him from the back. Meanwhile, this image is projected in front of him, and presented as though it is pre-filmed footage of another person. We ask John his impression of that person in the film, and he says “It’s a criminal.”’<sup>30</sup>

John gbloɔbe yè nyi fianfitɔ.  
 John say COMPL LOG COP thief  
 ‘John said that he was a thief.’

- b. *Scenario*: As in (53a), but John thinks rather than says that the person is a criminal.

John xɔse be yè nyi fianfitɔ.  
 John believe COMPL LOG COP thief  
 ‘John believes that he is a thief’.

- (54) *Scenario*: Following a spate of burglaries, a policeman was alerted by CCTV operators that someone was acting suspiciously, and chased after that individual, unaware that it was himself.<sup>31,32</sup>

Sodza xɔse be yè nyi fianfitɔ.  
 Policeman believe COMPL LOG COP thief  
 ‘The policeman<sub>i</sub> believed that he<sub>i</sub> was a thief.’

Only Consultant 3 judged these examples to be false. This is compatible with either (i) *yè* being obligatorily *de se* in Consultant 3’s grammar or (ii) Consultant 3 having a strong preference for the *de se* construal when confronted with a *de se/de re* ambiguity. To decide between these options, we investigated his judgments of French attitude reports with an embedded ordinary pronoun that is interpreted as coreferential with the attitude holder. The results provide evidence for (ii); for example, (55) was judged false in the scenario described in (53).

<sup>30</sup> Scenario quoted from Percus and Sauerland (2003a, p. 228).

<sup>31</sup> This is an event that actually happened. Instead of describing the story to our consultants we had them read a short news report about it, retrieved from <http://uk.news.yahoo.com/policeman-'chased-himself'-for-20-minutes-while-looking-for-suspect.html>. We learned about this story from Robert Truswell.

<sup>32</sup> Consultant 2 initially judged (54) to be false. However, evidence for a *de re* reading of *yè* in this example comes from his judgments about (54) as a possible answer to the question, “Who did the policeman believe was a thief?”, asked by someone who had not fully understood the story. Consultant 2 judged (54) an appropriate answer to this question.

- (55) John<sub>i</sub> croit qu'il<sub>i</sub> est voleur.  
John<sub>i</sub> believes that he<sub>i</sub> is a thief.

Given the French data, we cannot establish whether *yè* is ambiguous in Consultant 3's grammar solely on the basis of his judgments concerning mistaken identity scenarios. We therefore elicited his judgments about reports of dreams involving so-called 'counter-identity'. A property of dream reports discussed in Heim (1994), Lakoff (1970), and Percus and Sauerland (2003b) is their ability to describe scenarios where the counterpart of the attitude holder in the dream is some individual other than herself. Consider the following example.

- (56) John dreamed that he was Barack Obama and he gave himself a gift.

A salient reading of this sentence is that in the dream, the speaker's 'dream self' is Obama, and this individual gives a gift to the attitude holder's 'actual self', John. On this reading, the subject of the second conjunct is construed *de se*, and the reflexive is construed *de re*. Once it has been established that the speaker's dream self is Obama, then, any *de se* pronoun in this environment cannot fail to pick out Obama. To show that this is the case, we will first consider a dream report with no reflexive, only a *de se* pronoun in subject position.

- (57) In John's dream he was Barack Obama. He dreamt that he won the Nobel Peace Prize.

Given the lexical entry for *dream* in (58), the interpretation of the second sentence is as in (59).

- (58)  $\llbracket \text{dream}^{\text{de se}} \rrbracket^{\text{c.g}} = \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda x_e \lambda w_s. \forall \langle w', y \rangle \in \mathbf{dream}_{x,w}, P(y)(w')$   
where  $\mathbf{dream}_{x,w} = \{ \langle w', y \rangle : \text{what } x \text{ dreams in } w \text{ is true in } w' \text{ and } x \text{ identifies } y \text{ as herself in } w' \}$

- (59) a.  $[\lambda w_1 [w_1 \text{ John dreamed } [\lambda x_2 \lambda w_3 [w_3 \text{ he}_2 \text{ won the Nobel Peace Prize}]]]]$   
b.  $\llbracket [59a] \rrbracket^{\text{c.g}} = \lambda w. \forall \langle w', y \rangle \in \mathbf{dream}_{\text{John},w}, y \text{ wins the Nobel Peace Prize in } w'$ .

*Dream* is a universal quantifier over world-individual pairs  $\langle w', y \rangle$  such that it is compatible with what the attitude holder dreams for her to be *y* in *w'*. But we have set up a context that entails that in John's dream, he is Barack Obama. Thus for any world-individual pair  $\langle w', y \rangle$  that is a member of John's *dream*-alternatives, *y* is Obama. It is this individual who wins the Nobel Peace Prize according to the dream report. This shows that if a pronoun is construed *de se* in a dream report, and if in the dream the dreamer is some individual other than who she actually is, then the pronoun must pick out that other individual.

This makes a clear prediction concerning *yè*: if in Consultant 3's grammar it is obligatorily construed *de se*, then in dream reports *yè* should unambiguously pick out the individual that the attitude holder dreams that she is. This prediction is not borne



out. Consultant 3 judged (60) true in a situation where in the reported dream Barack Obama (or rather, John in the guise of Barack Obama) watched John give John a gift:

- (60) John      koudrin      be            yè        nyi      Barack    Obama  
        John      dream      COMPL    LOG     COP     Barack    Obama  
  
        koudo    yè            na            yè        cadeau.  
        CONJ    LOG        give        LOG        gift  
        ‘John dreamed that he was Barack Obama and he gave himself a gift.’

We conclude that *yè* has a de re reading in both Mina and ‘pure’ Ewe.

#### 4.2 De se construal of *yè*

In addition to being judged true in a mistaken identity scenario, an attitude report incorporating *yè* is also judged true in a de se scenario, where the reported attitude is first personal. For example, (51) from the last subsection is judged true in the scenario below.

- (61) *Scenario*: John has just found an old paper that he wrote. He reads it and is proud of what a good paper it is. He says, “I am clever.”

John      be      yè        le        cleva.  
 John      say    LOG     COP     clever  
 ‘John said that he was clever.’

Given the theoretical framework laid out in Sect. 2, we might conclude that on the relevant reading, (61) has the following LF, where *yè* is bound by the attitude verb:

- (62)  $[\lambda w_1 [w_1 \text{ John said } [\lambda x_2 \lambda w_3 [w_3 yè_2 \text{ was clever}]]]]$

However, an anonymous reviewer points out that the truth of (61) in a de se scenario is insufficient to demonstrate that the sentence has a de se LF. As is well known, a de se construal can also be obtained by interpreting the pronoun de re relative to the acquaintance relation of identity. To show that *yè* can be bound as in (62), we use an argument borrowed from Percus and Sauerland (2003a). Percus and Sauerland discuss scenarios where every member of a group has a particular belief about herself (that she is clever, say), but this belief is first personal for only one member of the group. Consider (63).

- (63) *Scenario*: John, Mary, Sue, and Bill have all been reading old papers of theirs from when they were in college (John reads a paper John wrote, Mary reads a paper Mary wrote, etc.) Each of them is impressed by the paper and takes it as a sign that its author is clever. However, only John is aware that he is the author of the paper that he read—everyone else fails to recognize their own work. So John says, “I am clever,” and Mary, Sue and Bill each say, “Whoever wrote this paper is clever.”

There is a reading of the English sentence *Only John said that he was clever* where it is true in this scenario. The sentence is expected to be true if the verb phrase *said that he was clever* expresses a property that is true of John but not of any other salient individual. This is the case on a reading where *he* is bound by *say*, since in the given scenario, no other individual said that she (de se) was clever. However, it would not be the case if the sentence were assigned a de re LF; in that case, the property expressed by the verb phrase would be true of any individual that bears some acquaintance relation *R* to herself such that she said that the individual to whom she bears *R* is clever. In the scenario in (63), this property is true of every salient individual: the existential quantification is witnessed by the identity acquaintance relation for John, and by the ‘read the paper of’ relation for everyone else. According to Percus and Sauerland’s reasoning, this shows that there is a dedicated de se LF for *Only John said that he was clever*. We can use the same argumentation to show that *yè* can be bound by an attitude predicate: (64) is judged true in the scenario we have been considering.

- (64) John deka *yé* be *yè* le cleva.  
 John only FOC say LOG COP clever  
 ‘Only John said that he was clever.’

In the next section, we argue that *yè* not only *can* be bound by an attitude verb, but in fact *must* be. We argue that by appeal to the hybrid de se–de re LFs discussed in Sect. 2.4, this proposal can be reconciled with their ability to be read de re.

## 5 Reconciling the distribution of *yè* with its interpretation

### 5.1 The Heim–von Stechow view

We saw in Sect. 2.1 that Heim and von Stechow provided a straightforward account of why *yè* has the distribution that it does. According to this view, *yè* obligatorily occurs in the scope of an attitude predicate and takes the attitude holder as its antecedent because it bears an uninterpretable feature [*log*] that must be checked via binding by the individual abstractor that such a predicate introduces. A sample LF is provided in (65).

- (65) [<sub>CP1</sub>λ<sub>w1</sub> [<sub>w1</sub> John said<sub>[log]</sub> [<sub>CP2</sub>λ<sub>x2</sub>[<sub>log</sub>]λ<sub>w3</sub>[<sub>w3</sub> *yè*<sub>[log]</sub> was clever]]]]]

Since the possibility was not considered that this operator-variable configuration might interact with additional covert structure—a concept generator variable introduced by a resP in which *yè* is embedded, as described in Sect. 2.4—it was predicted that *yè* cannot be read de re, contrary to the facts laid out in the last section. In this subsection, we consider in greater detail the advantages of Heim and von Stechow’s idea that make it worthwhile to attempt to reconcile their approach with the de se/de re ambiguity of *yè*. In Sect. 5.2 the Heim–von Stechow approach is

contrasted with an alternative account of the distribution of *yè* that does not require it to be bound by an attitude predicate. According to this alternative view, *yè* is instead required to be bound by the attitude holder DP itself.<sup>33</sup> We argue that the Heim–von Stechow view is more successful than this approach in accounting for the distribution of *yè*. In Sect. 5.3, we show in greater detail how the assumption that the grammar makes available hybrid *de se–de re* LFs as described in Sect. 2.4 enables this proposal to be reconciled with the *de se/de re* ambiguity exhibited by *yè*.

The idea that logophoric pronouns bear a formal feature requiring them to be bound by an attitude verb provides a means of formulating a constraint that has clear semantic consequences. Recall that *yè* can be licensed by an attitude verb in a previous sentence:

- (66) Kofi be *yè* bidzi. Marie zu *yè*.  
 Kofi say LOG angry. Mary insult LOG  
 ‘Kofi<sub>i</sub> said that he<sub>i</sub> was angry. Mary insulted him<sub>i</sub>.’

Example (66) requires that Kofi said that Mary insulted him. This is reminiscent of the well-known phenomenon of modal subordination, discussed in Roberts (1989).

- (67) A thief might break into the house. He would take the silver.

Intuitively, the second sentence in (67) is interpreted with respect to those worlds quantified over by the modal in the first sentence—that is, those where a thief breaks into the house. Similarly, the second sentence in (66) is interpreted with respect to the (centred) worlds quantified over by *say* in the first sentence. In both cases, the scope of the modal seems to be extended over the second sentence. The presence of *yè* forces this to be the case, presumably because of the requirement that *yè* be interpreted in the scope of an attitude. This idea can be formulated in Heim’s and von Stechow’s terms by letting the requirement of binding by an attitude predicate imposed by the feature [log] be satisfied by an attitude predicate in a preceding sentence. While more needs to be said about how this comes about, an approach along these lines seems promising given the independent evidence from other corners of the grammar that the scope of modal operators can be ‘extended’ across sentences.

An additional advantage of the Heim–von Stechow view is that it provides an explanation of why *yè* is not licensed in the scope of ordinary modal quantifiers that are not attitude predicates. The following example, repeated from (44a) in Sect. 3.2, reminds us of this constraint.

- (68) \*Kofi wɔ be *yè* dzo.  
 Kofi do COMPL LOG leave  
 Intended: ‘Kofi caused himself to leave.’

Since *cause* carries no entailments about the mental state of its agent, it is an ordinary modal quantifier rather than an attitude predicate, and introduces a world abstractor but not an individual abstractor. Yet licensing of [log] on *yè* requires an

<sup>33</sup> We thank an anonymous reviewer for prompting us to think about this alternative in greater detail.

individual abstractor, since  $yè$  is not of an appropriate type to be bound by a world binder. Hence in (68) the licensing condition on  $yè$  is correctly predicted not to be satisfied. Notice that a syntactic condition requiring  $yè$  to occur in an embedded clause would not be enough to explain (68): the distribution of  $yè$  is constrained by the semantics of the predicate that introduces it, and hence a theory of this distribution should make reference to semantic notions.

Finally, the Heim–von Stechow view accounts for the observation in (46) above that when  $yè$  is introduced by a three-place attitude verb, it is the DP that denotes the bearer of the reported attitude that acts as the antecedent. Here is a reminder of the relevant data.

- (69) Kofi gblon na Marie be  $yè$  do.  
 Kofi say PRP Mary COMPL LOG leave  
 ‘Kofi told Marie that he/\*she left.’

Binding of  $yè$  by the attitude predicate straightforwardly predicts the impossibility of  $yè$  picking out Mary in (69). To show this, we need a lexical entry for the variant of *say* that takes two nominal arguments (70). (71) computes the interpretation.

- (70)  $\llbracket \text{say}^{\text{de sc/3-place}} \rrbracket^{\text{c,g}} = \lambda x_e \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda y_e \lambda w_s, \forall \langle w', z \rangle \in \text{say}_{y,x,w}, P(z)(w')$   
 where  $\text{say}_{y,x,w} = \{ \langle w', z \rangle : \text{what } y \text{ says to } x \text{ in } w \text{ is true in } w' \text{ and } y \text{ identifies } z \text{ as herself in } w' \}$

- (71) a. Kofi said to Mary that  $yè$  left.  
 b.  $[\text{CP}_1 \lambda w_1 [w_1 \text{ Kofi said}_{[\text{log}]} \text{ to Mary } [\text{CP}_2 \lambda x_2 [\text{log}] \lambda w_3 [w_3 yè_{2[\text{log}]} \text{ left}]]]]$   
 c.  $\llbracket \text{CP}_1 \rrbracket^{\text{c,g}} = \lambda w. \forall \langle w', z \rangle \in \text{say}_{\text{Kofi, Mary}, w}, z \text{ left in } w'$

In (71), the property of leaving is applied to epistemic alternatives of Kofi rather than Mary. If  $yè$  is abstracted over, then the resulting interpretation cannot fail to be one where Kofi is the antecedent of  $yè$ . Once again, the Heim–von Stechow view makes the right prediction.

### 5.2 An alternative account

Whatever its successes in accounting for the distribution of  $yè$ , the discovery that  $yè$  can be construed de re presents a serious challenge to the Heim–von Stechow view in its original form. In this subsection, we explore an alternative view that correctly predicts that the distribution of  $yè$  is confined to attitude reports, and that it must denote the attitude holder. We show, however, that unlike the Heim–von Stechow view, this account overgenerates.

Suppose we adopt Heim and von Stechow’s assumption that attitude verbs introduce an uninterpretable feature [log] into the derivation, but say that they pass this feature on to one of the DPs in the matrix clause, thereby marking it as the attitude holder. It would follow from such an amendment that  $yè$  need not be bound by the abstractor introduced by the attitude verb: assuming that the subject of *say*

undergoes QR and passes its [log] feature to the binder, this operator could also check  $yè$ 's [log] feature, as shown in (72).

- (72) [<sub>CP1</sub>  $\lambda w_1$  [<sub>w1</sub> John  $\lambda x_{2[\log]}$  said<sub>[\log]}</sub> (to Mary) [<sub>CP2</sub>  $\lambda x_{3[\log]}$   $\lambda w_4$  [<sub>w4</sub>  $yè_{2/3[\log]}$  was clever]]]]]

The de se/de re ambiguity of  $yè$  follows: binding by the higher abstractor is compatible with the de re reading, and binding by the lower one yields the de se reading.<sup>34</sup> This account correctly predicts that the distribution of  $yè$  is confined to attitude reports (or to attitude reports and reflexive environments), since it carries over from the Heim–von Stechow account the idea of making the licensing of  $yè$  dependent upon some feature that is introduced into the derivation by an attitude verb.<sup>35</sup> Moreover, it retains the prediction that  $yè$  picks out the attitude holder, since this follows from either of the two binding options that are available according to this view. However, the account fails to exclude configurations where  $yè$  falls outside the *scope* of the attitude verb. In particular, it incorrectly predicts that for Consultants 1 and 3, for whom  $yè$  is ungrammatical in non-attitudinal reflexive environments,  $yè$  *dokui* should be licensed in the matrix clause of an attitude report:

- (73) Kofi gblon na \* $yè$ /e *dokui* be  $yè$  le cleva.  
 Kofi say PRP LOG/3SG REFL COMPL LOG COP clever  
 ‘Kofi said to himself that he was clever.’

Here [log] on the first occurrence of  $yè$  should be checked under binding by the attitude holder, yet  $yè$  is unlicensed. Stipulating that  $yè$ 's licensor cannot occur in the same minimal IP as  $yè$  will not help, since this would fail to predict the acceptability of  $yè$  under coindexation with a higher  $yè$  in the same IP, as in (74):

- (74) John koudrin be  $yè$  nyi Barack Obama  
 John dream COMPL LOG COP Barack Obama  
 koudo  $yè$  na  $yè$  *dokui* cadeau.  
 CONJ LOG give LOG REFL gift  
 ‘John dreamed that he was Barack Obama and he gave himself a gift’.

We conclude that unlike the Heim–von Stechow view, this proposal cannot straightforwardly account for the distribution of  $yè$ . In the next subsection, we show how the semantic judgments presented in this paper can be reconciled with the Heim–von Stechow view by appealing to the hybrid de se–de re LFs introduced in Sect. 2.4.

<sup>34</sup> Given the approach to de re that we assume,  $yè$  would be embedded in a resP in order to yield the de re reading.

<sup>35</sup> We continue to assume that for speakers for whom  $yè$  can occur as part of a complex reflexive in a simple matrix sentence, it can be born with the feature [reflexive] rather than [log].

### 5.3 Our proposal

Consider (61), repeated below as (75). Recall that we found that this example is true in either of the two scenarios given.

(75) *Scenario 1:* John has just found an old paper that he wrote, but he doesn't realize that he is the author of the paper. He reads it and is impressed by what a good paper it is. He says, "Whoever wrote this paper is clever."

*Scenario 2:* John has just found an old paper that he wrote. He reads it and is proud of what a good paper it is. He says, "I am clever."

John	be	yè	le	cleva.
John	say	LOG	COP	clever

'John said that he was clever.'

We postulate two distinct LFs for (75); these differ minimally from one another in that one involves a concept generator variable and the other does not. In both cases, *yè* is bound by the individual abstractor introduced by *say*. In the case of the LF corresponding to Scenario 2, an additional abstractor is introduced which binds the concept generator variable. Concomitantly, the type of *say* is different in the two cases, (76) and (77).

(76)  $\llbracket \text{say}^{\text{de se}} \rrbracket^{\text{c.g}} = \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda x_e \lambda w_s. \forall \langle w', y \rangle \in \mathbf{say}_{x,w}, P(y)(w')$   
 where  $\mathbf{say}_{x,w} = \{ \langle w', y \rangle : \text{what } x \text{ says in } w \text{ is true in } w' \text{ and } x \text{ identifies herself as } y \text{ in } w' \}$

(77)  $\llbracket \text{say}^{\text{de re}} \rrbracket^{\text{c.g}} = \lambda \Pi_{\langle \langle e, \langle s, \langle e, e \rangle \rangle \rangle, \langle e, \langle s, t \rangle \rangle \rangle} \lambda x_e \lambda w_s. \exists G: G \text{ is suitable for } x \text{ in } w \ \& \ \forall \langle w', z \rangle \in \mathbf{say}_{x,w}, \Pi(G)(y)(w')$   
 where a concept generator *G* is suitable for *x* in *w* iff for all *u* in the domain of *G*:

- (i) either (a)  $G(u)(w, x) = u$ , or (b) *u* is an epistemic *Reliability* alternative of *x* in *w* and  $G(u)(w, x) = x$ ;
- (ii) there is an acquaintance relation *R* such that: *Acquaintance-based*
  - (a) for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ , *y* bears *R* uniquely to  $G(u)(w', y)$  in *w'* and
  - (b) if *u* is an epistemic alternative of *x* in *w*, then for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ , *y* bears *R* uniquely to  $G(x)(w', y)$  in *w'*.

Expressions (78) and (79) provide the computations for the de se and de re readings of (75) respectively.

- (78) a.  $[_{CP1} \lambda w_1 [w_1 \text{ John says}_{[log]} [_{CP2} \lambda x_2 [log] \lambda w_3 [w_3 y \dot{e}_2]_{[log]} \text{ is clever}]]]$   
 b.  $[[CP1]]^{c:g} = \lambda w. \forall \langle w', y \rangle \in \mathbf{Say}_{John,w}, y \text{ is clever in } w'$
- (79) a.  $[_{CP1} \lambda w_1 [w_1 \text{ John says}_{[log]} [_{CP2} \lambda G_2 \lambda x_3 [log] \lambda w_4 [w_4 [_{resP} G_4 y \dot{e}_3]_{[log]} w_4 x_3] \text{ is clever}]]]$   
 b.  $[[CP1]]^{c:g} = \lambda w. \exists G: G \text{ is suitable for John in } w \ \& \ \forall \langle w', y \rangle \in \mathbf{Say}_{John,w}, G(y)(w')(y) \text{ is clever in } w'$

Of these, (78) is the familiar de se case; the sentence is true on this reading in Scenario 2, but not in Scenario 1. For the latter case, the concept generator comes to the rescue, as in (79). In this scenario, John reads a paper that he has no memory of writing and remarks that its author is clever. On the reading in (79), the sentence is true just in case there is some concept generator G suitable for John such that in all of John's *say*-alternatives  $\langle w', y \rangle$ , the individual picked out by G applied to y at  $\langle w', y \rangle$  is clever in w'. If G is suitable for John, then for any epistemic alternative y of John,  $G(y) = G(\text{John})$ . Consequently, for any *say*-alternative of John's  $\langle w', y \rangle$ ,  $G(y)(w')(y') = G(\text{John})(w')(y)$ . In Scenario 1, a salient acquaintance relation is that relation R that x bears to u in w just in case x is reading u's paper in w; John bears this relation to himself. Let G be that concept generator such that John bears R to  $G(\text{John})(w)(\text{John})$ , and for each of John's *say*-alternatives  $\langle w', y \rangle$ , y bears R to  $G(\text{John})(w')(y)$  in w'. If so, then at each of John's *say*-alternatives  $\langle w', y \rangle$ , y bears R to  $G(y)(w')(y)$  in w'. G witnesses the existential quantifier in (79b) in Scenario 1 as needed.

We now have an explanation of the surprising fact that  $y \dot{e}$  can be construed de re. In fact, this discovery no longer seems so surprising: the assumption that binding by an attitude predicate always induces a de se reading seems wrong once we consider the possibility of hybrid de se–de re LFs. This proposal retains the virtues of Heim's and von Stechow's idea. As with their approach, the account of  $y \dot{e}$ 's distribution is simply that  $y \dot{e}$  must be bound by an attitude verb.

## 6 An objection

An anonymous reviewer drew our attention to the following scenario. Suppose that John is delusional and in a psychiatric hospital; he has been known to proclaim that he is Napoleon. Watching a television report about a hospital that he does not recognize as his own, he remarks that the patient that he just saw on TV is delusional, not realizing that this patient is himself. The reviewer observes the following pattern of judgments in this scenario:

- (80) a. John claims that he is delusional. *True* (on de re reading)  
 b. John claims that Napoleon is delusional. *False*

The truth of (80a) and falsity of (80b) demonstrate that they have different truth conditions. We need to check whether this is predicted for the Ewe variant of (80a) where  $yè$  is the subject of the embedded clause. Here are the LFs for the de re reading of  $yè$  and for (80b).

- (81) a.  $[_{CP1} \lambda w_1 [_{w_1} \text{John claims}_{[log]} [_{CP2} \lambda G_2 \lambda x_3 [_{log}] \lambda w_4 [_{w_4} [_{resP} G_2 yè_{3[log]} w_4 x_3] \text{is delusional}]]]]]$
- b.  $[_{CP1} \lambda w_1 [_{w_1} \text{John claims}_{[log]} [_{CP2} \lambda G_2 \lambda x_3 [_{log}] \lambda w_4 [_{w_4} [_{resP} G_2 \text{Napoleon } w_4 x_3] \text{is delusional}]]]]]$

Since (81a) is a hybrid de se–de re LF, the argument of the concept generator is a variable ranging over John’s epistemic alternatives. In the relevant scenario, any epistemic alternative of John’s should be Napoleon. But in (81b), the concept generator is fed Napoleon as its argument. So do we, incorrectly, predict that (81a) and (81b) have the same truth conditions?

What it would take for this prediction to follow from our proposal is for any concept generator  $G$  that is suitable for John in  $w$  to be such that for any epistemic alternative of John’s,  $y$ ,  $G(y) = G(\text{Napoleon})$ . But this is not the case. Given that we assume a theory of world-bound individuals, the proper name *Napoleon* denotes an inhabitant of the actual world—namely, the individual Napoleon. A variable that ranges over John’s epistemic alternatives ranges over inhabitants of worlds compatible with John’s attitude; such individuals do not inhabit the actual world and are therefore distinct from the referent of *Napoleon*. To see that our approach treats the referent of *Napoleon* differently from John’s epistemic alternatives, even when John believes that he is Napoleon, recall our definition of suitability, repeated here from (39):

(82) *Suitable concept generator*

A concept generator  $G$  is *suitable* for  $x$  in  $w$  iff for all  $u$  in the domain of  $G$ :

- (i) either (a)  $G(u)(w, x) = u$ , or (b)  $u$  is an epistemic alternative of  $x$  in  $w$  and  $G(u)(w, x) = x$ ; *Reliability*
- (ii) there is an acquaintance relation  $R$  such that: *Acquaintance-based*
  - (a) for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ ,  $y$  bears  $R$  uniquely to  $G(u)(w', y)$  in  $w'$  and
  - (b) if  $u$  is an epistemic alternative of  $x$  in  $w$ , then for all world-individual pairs  $\langle w', y \rangle$  in the domain of  $G(u)$ ,  $y$  bears  $R$  uniquely to  $G(x)(w', y)$  in  $w'$ .

Given a theory of world-bound individuals, any given element of the domain of a suitable concept generator will satisfy exactly one of the two disjuncts in clause (i) of (82). In (81a), the argument of the concept generator is a variable ranging over John’s epistemic alternatives, meaning that the first disjunct applies; in (81b), it is an inhabitant of the actual world, meaning that the second disjunct applies. Additionally, clause (ii.b) applies to (81a) but not to (81b). The semantics thus treats the two sentences differently.

Here are the predicted truth conditions of (81a).



- (83) (81a) is true in  $w$  just in case there is some concept generator  $G$  such that:
- (i) for every epistemic alternative  $y$  of John's,  $G(y)(w, \text{John}) = \text{John}$ ;
  - (ii) for every epistemic alternative  $y$  of John's there is some acquaintance relation  $R$  such that (a) for every  $\langle w', z \rangle$  in the domain of  $G(y)$ ,  $z$  bears  $R$  uniquely to  $G(\text{John})(w', z)$  in  $w'$ , and (b) for every  $\langle w', z \rangle$  in the domain of  $G(y)$ ,  $z$  bears  $R$  uniquely to  $G(y)(w', z)$  in  $w'$ ;
  - (iii) for every *claim*-alternative  $\langle w', y \rangle$  of John's,  $G(y)(w', y)$  is delusional in  $w'$ .

Given that a suitable concept generator treats a variable over epistemic alternatives of the attitude holder as though it were the attitude holder herself, (83) reduces to the following:

- (84) (81a) is true in  $w$  just in case there is some concept generator  $G$  such that:
- (i)  $G(\text{John})(w, \text{John}) = \text{John}$ ;
  - (ii) there is some acquaintance relation  $R$  such that for every  $\langle w', z \rangle$  in the domain of  $G(\text{John})$ ,  $z$  bears  $R$  uniquely to  $G(\text{John})(w', z)$  in  $w'$ ;
  - (iii) for every *claim*-alternative  $\langle w', y \rangle$  of John's,  $G(\text{John})(w', y)$  is delusional in  $w'$ .

These conditions are met in a scenario where John sees himself on television and says that the man he saw on TV is delusional. The truth of (81a) is thus predicted. To check that (80b) is correctly derived to be false, consider the predicted truth conditions of this sentence in (85).

- (85) (80b) is true in  $w$  just in case there is some concept generator  $G$  such that:
- (i)  $G(\text{Napoleon})(w, \text{John}) = \text{Napoleon}$ ;
  - (ii) there is some acquaintance relation  $R$  such that for every  $\langle w', z \rangle$  in the domain of  $G(\text{Napoleon})$ ,  $z$  bears  $R$  uniquely to  $G(\text{Napoleon})(w', z)$  in  $w'$ ;
  - (iii) for every *claim*-alternative  $\langle w', y \rangle$  of John's,  $G(\text{John})(w', y)$  is delusional in  $w'$ .

In our scenario, there is no salient acquaintance relation  $R$  that John bears to Napoleon, such that he claims that the individual to whom he bears  $R$  is delusional. The sentence is thus correctly predicted to be false.

## 7 Consequences of the proposal

If the grammar admits hybrid de se–de re LFs, and these are assigned the interpretation described in this paper, then it follows that binding by an attitude predicate is not a sufficient condition for being construed de se. Our analysis therefore leads us back to a question that had previously seemed to have a satisfactory answer: why can PRO not be read de re? Section 7.1 sketches a possible answer to this question. Ultimately, the interpretation of PRO should be reconciled

not only with that of *yè* in Ewe, but also with the interpretation of logophors in other languages. In Sect. 7.2, we survey some results of previous work on this topic. Finally, in Sect. 7.3, we call attention to an application of our proposal to a well-known puzzle concerning binding-theoretic effects with *de re* reflexives (Heim 1994; Sharvit 2011).

### 7.1 Interpretation of PRO

In light of the possibility of embedding an element that is bound by an attitude predicate in a *resP*, the fact that the logophoric pronoun in Ewe can receive a *de re* construal is not so surprising after all. If anything is in need of explanation, it is the existence of elements like obligatorily controlled PRO whose interpretation is restricted to a *de se* construal. If the analysis of control in Chierchia (1990) is correct, then PRO and logophoric pronouns look rather alike. But if *yè* can in addition be embedded within a *resP*, what is to save PRO from the same fate? In this section, we suggest that the answer to this question lies in the fact that *yè* can take a long-distance antecedent but PRO cannot. This is exemplified in (86) and (87).

- (86) Marie be Kofi *xɔse* be *yè* na *yè* cadeau.  
 Mary say Kofi believe COMPL LOG give LOG gift  
 (i) ‘Mary said that Kofi believed that she gave him a gift.’  
 (ii) ‘Mary said that Kofi believed that he gave her a gift.’

- (87) Kofi<sub>i</sub> believed that Mary<sub>j</sub> claimed [PRO<sub>\*i/j</sub> to have given him<sub>i</sub>/\*her<sub>j</sub> a gift].

We propose that this difference between PRO and *yè* arises because PRO lacks inherent phi-features and must inherit them from the controller, whereas *yè* bears [3<sup>rd</sup>].<sup>36</sup> This is shown in (88) and (89).

- (88) a. I claimed PRO to have dressed myself/\*yourself/\*herself.  
 b. You claimed PRO to have dressed \*myself/yourself/\*herself.  
 c. She claimed PRO to have dressed \*myself/\*yourself/herself.
- (89) \*M/\*o/Kofi *xɔse* be *yè* nyi sukuvi nyoe de.  
 1SG/2SG/Kofi believe COMPL LOG COP student good ART  
 \*I/\*you/Kofi believe that \*I am/\*you are/he is a good student.’

PRO is a minimal pronoun in the sense of Kratzer (2009): it is born without phi-features, and inherits them under binding by an operator in C. Crucially, the abstractor must be within PRO’s local domain; Kratzer assumes that phi-feature unification can only take place between two elements that are in a sufficiently local

<sup>36</sup> If there is a dialect where *yè* can take first and second person antecedents, future research should establish whether there are additional differences in the distribution and interpretation of *yè* in this dialect relative to the dialects we have investigated. A strong prediction is that in such a dialect, *yè*, like PRO, is born without phi-features and cannot take a long-distance antecedent. It would follow from the logic of this section that *yè* cannot be read *de re* in this dialect.

relationship. PRO therefore cannot take a long-distance antecedent. By contrast, the presence of [3<sup>rd</sup>] on *yè* means that it does not need to find its binder within its own CP; we assume that checking of uninterpretable features differs from phi-feature unification in that it can be accomplished by long-distance binding. Consequently, *yè* can occur in a configuration such as (87) with more than one attitude verb, and be bound by the higher of these. We illustrate this schematically below.

- (90) a. [DP ...*att1* ... [ $\lambda_{x_1}$  [DP ... *att2* ... [ $\lambda_{x_2}$  [PRO\*<sub>1/2</sub> ...]]]]]  
 b. [DP ...*att1* ... [ $\lambda_{x_1}$  [DP ... *att2* ... [ $\lambda_{x_2}$  [*yè*<sub>1/2</sub> ...]]]]]

We have seen that the antecedent of *yè* is the individual designated as attitude holder by the predicate that binds it. Where *yè* takes a long-distance antecedent  $\alpha$ , its binder is the (abstractor introduced by) the attitude verb that designates  $\alpha$  as its attitude holder. Such an abstractor is too far away from PRO to enable phi-feature unification to take place, leading to the observed locality constraint on the domain in which PRO finds its controller.

Yet mere binding of *yè* by a higher abstractor is not sufficient to generate the interpretation assigned to *yè* when it takes a long-distance antecedent. To see this, focus on reading (i) of (86), repeated below.

- (91) Marie be Kofi *xõse* be *yè* na *yè* cadeau.  
 Mary say Kofi believe COMPL LOG give LOG gift  
 (i) 'Mary said that Kofi believed that she gave him a gift.'  
 (ii) 'Mary said that Kofi believed that he gave her a gift.'

The sentence is verified on this reading if Mary said, "Kofi believes of me that I gave him a gift." Is the higher occurrence of *yè* construed *de se* or *de re* in this case? It seems to be read *de se* with respect to Mary's attitude (as witnessed by the use of the first person pronoun) and *de re* with respect to Kofi's (as witnessed by the use of the *of*-phrase to identify Mary as the res). One way to see this is to notice that a sentence like (91) gives rise to a double vision problem of the kind familiar from Quine (1956). Consider the following scenario.

- (92) *Scenario*: There is a woman that Kofi has seen at the beach, and a woman that he has seen wearing a brown hat. He has formed the belief that an anonymous gift that he recently received was from the woman he saw at the beach. Unbeknown to him, the woman at the beach and the woman in the brown hat are one and the same individual. Aware of these facts, Mary reports them by saying (quite consistently), "Kofi believes that I gave him a gift" and "Kofi believes that I did not give him a gift."

Notice that the following sentences are both true in this scenario.

- (93) a. Mary said that Kofi believed that she gave him a gift.  
 b. Mary said that Kofi believed that she did not give him a gift.

This shows that while the subject of the most deeply embedded clause can (though need not) be construed de se with respect to Mary's attitude, it is construed de re with respect to Kofi's attitude. Mere binding of  $y\dot{e}$  by a higher abstractor is insufficient to predict this: if Percus and Sauerland are correct that a de re construal is mediated by a concept generator, then  $y\dot{e}$  must be embedded in a resP in addition to being bound by the higher abstractor.

Here is the LF for reading (i) of (91) and its interpretation.<sup>37</sup>

- (94) a. Mary says that Kofi believes that  $y\dot{e}_{\text{Mary}}$  gives  $y\dot{e}_{\text{Kofi}}$  a gift.  
 b.  $[\text{CP}_1 \lambda w_1 [w_1 \text{ Mary says}_{[\text{log}]} [\text{CP}_2 \lambda x_2 [\text{log}] \lambda w_3 [w_3 \text{ Kofi believes}_{[\text{log}]} [\text{CP}_3 \lambda G_4 \lambda x_5 \lambda w_6 [w_6 [\text{resP } G_4 y\dot{e}_{2[\text{log}]} w_6 x_5] \text{ gives } y\dot{e}_{5[\text{log}]} \text{ a gift}]]]]]]]$   
 c.  $[[\text{CP}_3]]^{\text{c-g}} = \lambda G \lambda x \lambda w. G(g(2))(w)(x) \text{ gives } x \text{ a gift in } w.$   
 d.  $[[\text{CP}_2]]^{\text{c-g}} = \lambda x \lambda w. \exists G: \forall \langle w', y \rangle \in \text{Dox}_{\text{Kofi}, w}, G(x)(w')(y) \text{ gives } y \text{ a gift in } w'.$   
 e.  $[[\text{CP}_1]]^{\text{c-g}} = \lambda w. \forall \langle w', y \rangle \in \text{say}_{\text{Mary}, w}, \exists G: \forall \langle w'', z \rangle \in \text{Dox}_{\text{Kofi}, w'}, G(y)(w'')(z) \text{ gives } z \text{ a gift in } w''.$

This, we suggest, is the clue that was already present in Clements' work to suggest that logophoric pronouns can after all be interpreted de re. If  $y\dot{e}$  can occur in a multiply embedded clause and denote some individual other than the immediately higher attitude holder, then it must be possible for it to be construed de re. The view that  $y\dot{e}$  is obligatorily bound by an individual abstractor but can in addition be embedded within a resP thus fits quite elegantly with the ability of  $y\dot{e}$  to denote a non-local attitude holder.

Embedding of a pronoun in a resP involves positing additional covert structure, and therefore should only be employed as a last resort for reasons of economy. The ability to take a long-distance antecedent is the circumstance that can cause the grammar to resort to this option. It is therefore expected that an element like PRO that cannot take a long-distance antecedent is obligatorily construed de se.

## 7.2 Interpretation of logophoric pronouns in other languages

The proposal in the last section makes a clear prediction: any element that is bound by an attitude predicate and obligatorily takes the most local attitude holder as its antecedent is necessarily construed de se. This prediction appears to be borne out for the covert experiencer argument of predicates of personal taste such as *fun* and *tasty* (Pearson 2013a; Stephenson 2007a, b) and the 'knower' argument of epistemic modals (Stephenson 2007a, b). Secondly, we claim that any logophoric element that can take a long-distance antecedent admits a de re construal, since in this configuration, it is interpreted de re with respect to the most immediate attitude. Underlying the approach is the idea that the possibility of embedding a logophoric element in a resP is a last resort option that becomes available only if it is able to take a long-distance antecedent.

<sup>37</sup> By the same reasoning, 'Kofi' should strictly speaking be embedded in a resP too, but we gloss over this to keep the representations manageable.

In principle, one can imagine two versions of the last resort option. The first is what we have already seen in the case of Ewe: the ability of *yè* to take a long-distance antecedent triggers the possibility of embedding of *yè* in a resP—an option that is available regardless of whether a long-distance antecedent is actually present in the attitude report in question. The second appears to be instantiated with logophors in Yoruba (Anand 2006) and Tangale (Haida 2009). In these languages, the logophor can take a long-distance antecedent, and yet it seems that it is obligatorily construed *de se* in mistaken identity scenarios. (95) illustrates the availability of a long-distance antecedent in Tangale, and (96) exemplifies the *de se* construal.

- (95) Malaŋ                   yim-go           ká:           Tulo:           ne: ká:       yi  
 Malang.MASC   think-PERF   COMPL   Tuloo.FEM   say   COMPL   LOG  
 ŋa                   mana-m       kude.  
 PROG.have       house-LNK   big  
 ‘Malang<sub>i</sub> thinks that Tuloo said that he<sub>i</sub> has a big house.’

(Haida 2009, p. 9, ex. (12))

- (96) *Scenario*: Awang sees, reflected in a window, the image of a man whose clothes seem to be dirty. It is Awang’s mirror image, but he does not recognize the man as himself. He says (pointing to his mirror image): “Mbe:ndaŋ tashin landan kudekkudek.” ‘He is wearing dirty clothes.’

Awang                   gá: yi       tashin       landa-n       kudek-kudek.  
 Awang.MASC   say   LOG   wear       cloth-LNK   black-black  
 ‘Awang<sub>i</sub> said that he<sub>i</sub> is wearing dirty clothes.’                   False

(Haida 2009, p. 4, exs. (3), (4))

If the argumentation in the last subsection is correct, then in (95) the logophor must be read *de re* with respect to Tuloo’s speech act. Yet (96) suggests that the logophor is not construed *de re* in this sentence. Similar facts are reported for Yoruba by Anand (2006). Notice that for an account where the logophor is merely abstracted over, it would be mysterious why it can take a long-distance antecedent at all. The data can be handled in our setup by treating embedding of the logophor as a last resort option that is highly constrained in Yoruba and Tangale and is only available when forced by the presence of a long-distance antecedent.

On the other hand, the possibility that there is crosslinguistic variation in whether logophors admit *de re* readings raises a serious acquisition problem. Given that the situations that provide evidence for the available readings rarely occur in everyday life, how could the child learn whether the logophor in her language has a *de re* construal? One option is that there are subtle distributional differences between logophors in Ewe, on the one hand, and Yoruba and Tangale, on the other, that could trigger coding of the logophor as ambiguous in the former language and unambiguously *de se* in the latter two. We are not currently aware of any such differences—indeed, it is not clear to us what form these differences would even

take—but we leave open the possibility that they may be uncovered by future research. The second option is that the judgments reported for Yoruba and Tangale merely reflect a preference for the *de se* interpretation. If so, then *de re* readings might be revealed by employing some of the strategies described in this paper. In particular, in future work on Yoruba and Tangale it would be worth looking at question-answer pairs of the kind that enabled Consultant 2 to detect the *de re* reading (footnote 32), and at dream reports.<sup>38</sup>

### 7.3 A new application: two English puzzles

It is worth asking whether there is evidence that hybrid *de se–de re* LFs are employed in any other corner of the grammar. In this section, we argue that these configurations are responsible for Heim’s famous puzzling reflexives in *de se* reports. Here is an example.

(97) John dreamt he kissed himself. (Heim 1994, p. 4, ex. (31))

Suppose that John dreamed that he was James Dean and that he, James Dean, kissed John. (97) is true in this scenario. This shows that *he* can be construed *de se* and *himself* can be construed *de re*. How is it that the two pronouns can be assigned these construals without a Principle A violation arising? Given orthodox assumptions about binding, the LF that permits *he* to be construed *de se* and *himself* to be bound in its local domain is (98).

(98)  $[_{CP1}\lambda w_1 [_{w_1} \text{John dreamt } [_{CP2}\lambda x_2\lambda w_3 [_{w_3} \text{he}_2 \text{kissed himself}_2]]]]]$

In (98), *he* is bound in the usual way, letting it be construed *de se*. If *himself* is to stand a chance of being syntactically bound, it should be coindexed with *he*. But then the property expressed by the embedded clause is the one given below:

(99)  $[[CP2]]^{c:g} = \lambda x\lambda w. x \text{ kissed } x \text{ in } w$

This is not the reading that we are after: it would mean that some self-kissing went on in the dream, which is not true of the scenario that we have in mind. Heim considers two solutions to this problem. One is that *himself* is not bound in the embedded clause, but rather from a distance, by the matrix subject. As she notes, however, this leads to a question about when long-distance binding can occur generally; something must be said about why *\*John dreamt that his mother kissed himself* is ungrammatical, for instance. A related idea is to have the reflexive raise out of the complement clause, letting it be bound locally in the matrix clause; but this likewise requires a characterization of the conditions under which such movement is permitted.

<sup>38</sup> Parallel research questions can be asked about shifted indexicals, since there is evidence that these are like Yoruba and Tangale logophors in tolerating long-distance antecedents but not *de re* scenarios (Anand and Nevins 2004, Anand 2006). However, any attempt to extend our approach to these cases would have to address the arguments in Anand’s work that indexical shifting arises via context shifting rather than lambda abstraction.

Sharvit (2011) discusses a variant of the puzzle involving c-command of de re reflexives by PRO (which is purely de se). Given these data, she proposes that Binding Theory is sensitive to two types of covaluation of arguments. Type I covaluation is the usual kind: two expressions are covalued just in case they have the same semantic value. Type II covaluation is the innovation; this “holds between two NPs if one of them denotes an attitude holder and the other corresponds to the ‘self’ of the attitude holder” (Sharvit 2011, p. 64). (The reader is referred to the paper for technical details.) When a de se pronoun c-commands a corresponding de re reflexive, Principle A is satisfied because the two items are Type II covalued.

Facts like (97) are considerably less puzzling from the perspective developed in this paper. There is no puzzle as to how Principle A is satisfied because the de re reflexive is indeed coindexed with the de se subject. It just so happens that this DP is embedded within a resP, making a de re interpretation available. Here is the LF:

- (100)  $[_{CP1} \lambda w_1 [_{w_1} \text{John dreamt } [_{CP2} \lambda G_2 \lambda x_3 \lambda w_4 [_{w_4} \text{he}_3 \text{ kissed } [_{\text{resP}} G_2 \text{ himself}_3 w_4 x_3]]]]]]]$

We leave the reader to verify that the interpretation of this LF is the desired one. The crucial point is that the configuration ensures that *he* is interpreted de se and *himself* is interpreted de re, while nonetheless letting these elements be coindexed. No stipulations about long-distance binding or movement are required as on Heim’s approach, and no amendment to the Binding Theory is needed as proposed by Sharvit.

Sharvit also shows that coindexing of a de re pronoun with PRO leads to a Principle B violation in a configuration where a de re reflexive is licit:

- (101) *Scenario*: Sarah Palin, who is running for president, wakes up from a coma and suffers from severe memory loss: she doesn’t remember that she is running for president and perhaps doesn’t even know who she is. McCain visits her in the hospital, and she says to him, “I don’t know who to vote for.” While the two of them look at a picture of her in the newspaper, he says to her, “You must vote for this woman.” Palin, who doesn’t recognize herself in the picture, says, “You are right; I will vote for this woman. She seems reliable.”

McCain convinced Palin<sub>i</sub> [ $\text{PRO}_i$  to vote for \*her<sub>i</sub>/herself].

(Sharvit 2011, p. 56)

Given our approach, this looks like evidence that a de se and a corresponding de re pronoun not only can be coindexed, but must be. That is, the only route to a de re construal of *her*, where *her* picks out Palin, is coindexing with PRO, and embedding within a resP.

- (102)  $*[_{CP1} \lambda w_1 [_{w_1} \text{McCain convinced Palin } [_{CP2} \lambda G_2 \lambda x_3 \lambda w_4 [_{w_4} \text{PRO}_3 \text{ to vote for } [_{\text{resP}} G_2 \text{ her}_3 w_4 x_3]]]]]]]$

The Principle B violation in (101) would have been circumvented if the object pronoun received a different index from that assigned to the individual abstractor

and PRO. Just why this route should be unavailable is a question that we have to leave open.<sup>39</sup>

## 8 Conclusion

This paper has explored the consequences of the discovery that there are logophoric pronouns that can be interpreted *de re*. We gave an analysis of the logophoric pronoun in Ewe that maintains the orthodox assumption that it is bound by an attitude predicate, thereby accounting for its distribution. The innovative aspect of our proposal is the idea that a pronoun in this configuration can be interpreted *de re* provided that it is embedded in a *resP*, enabling it to interact with a concept generator. This move necessitated a modification of the definition of concept generators that has the conceptual advantage of making it unnecessary to posit constraints on the distribution of *resPs* in the embedded clause in order to prevent concept generator variables from interacting with *de se* bound pronouns. On the empirical side, the theoretical apparatus made available by this proposal provides an account of observations due to Heim and Sharvit concerning binding-theoretic effects with *de re* anaphors and pronouns. In light of these considerations, it seems that the surprising fact is not that logophors can be interpreted *de re*, but rather that other elements such as PRO cannot be. We have offered a suggestion concerning why this should be that we hope will be explored in future work, particularly in relation to other obligatorily *de se* elements such as predicates of personal taste and epistemic modals, and to logophors in languages other than Ewe.

We close by considering whether our data might motivate a more radical departure from traditional analyses of attitude reports than we have proposed in this paper. Here we have been quite conservative, in that we have relied heavily on the view that *de se* construals arise via binding by an attitude verb, where such predicates are analyzed as quantifiers over world-individual pairs. Yet this view is in part motivated precisely by the observation that natural language has expressions that are obligatorily interpreted *de se*. Don't our data challenge this idea?

The data certainly do not falsify the claim that there are obligatorily *de se* expressions in natural language: generalizations concerning PRO, predicates of personal taste and epistemic modals remain robust, while the possibility that logophors in languages other than Ewe are necessarily *de se* remains open, pending further research. Adopting a more radical approach to the analysis of *yè* would entail either (a) abandoning the binding-by-attitude-verbs approach to *de se* entirely, or (b) formulating a new mechanism to derive the Ewe data that can sit along the binding-by-attitude-verbs approach. The first move would mean giving up the considerable progress that has been made in understanding *de se* in a variety of empirical domains by modeling *de se* pronouns as variables bound by attitude verbs. The

<sup>39</sup> One of the challenges in this area is to account for the fact that these Principle B violations do not arise with first person pronouns (Arregui 2007). In (i), the subject pronoun can be read *de se* and the object *de re*:

(i) I dreamt that I was Brigitte Bardot and I kissed me.

(Lakoff 1970)



second would complicate the theoretical apparatus in a manner that seems unnecessary, given that we have shown that the data can be accommodated within an existing framework for de se and de re attitude reports by means of a minimal amendment of the concept generator approach to de re.

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