

**De De Se**

by

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in partial fulfillment of the requirements for the degree of

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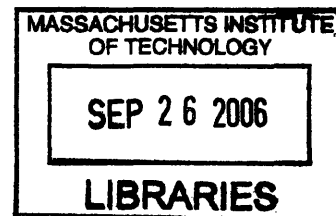
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**Abstract**

In this dissertation, I argue against a unitary treatment of individual *de se* ascription. Based on consideration of Yoruba logophors and English dream-report pronouns, I show that one mechanism is best analyzed as binding by an operator, which is sensitive to binding locality requirements. In contrast, I argue that cases of indexical shift (whereby token-reflexive elements such as *I* and *tomorrow* may be dependent on the context of an attitude predicate), which do not show local binding effects, are instances of overwriting of elements of the sequence of evaluation. As pronouns that are not obligatorily read *de se* show neither of the conditions for shifted indexicals nor West-African logophors, I argue that *de se* readings of these items must arise as special cases of *de re* ascription. Cross-linguistic instances of anti-logophoricity (i.e., the obligatory non-*de se* ascription of pronouns in certain contexts) are correspondingly treated as environments imposing a non-*de se* demand on *de re* ascription. Finally, I demonstrate that binding and overwriting mechanisms may both be found within the territory of *de se* long-distance anaphora, based largely on a systematic split in interpretation amongst Mandarin speakers on licensing and interpretative constraints on long-distance *ziji*.

Thesis Supervisor: Irene Heim  
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# Chapter 1

## The LFs of dream reports and logophoric environments

### 1.1 Introduction

Clubs can be strange places: with their glittering disco balls, dim mood lighting, and thronging masses it is often not too impossible to see things that are not there, or mistake one thing for another. Indeed, given an artfully disguised mirror at another end of the room and a suitable level of disorientation, you might even mistake your reflection for someone else. Such, borrowing a scenario of Kaplan (1989, p. 533), might be the case of John, who first mistaking his reflection in the mirror at the club for an actual person, thinks, “His pants are on fire!” and then, upon smelling smoke and feeling some unexpected heat around his ankles, thinks more alarmingly, “My pants are on fire!” The latter belief Lewis (1979) rightly dubbed *de se*, since it is inextricably about the first-person self. While the existence of *de se* thoughts seems innocent enough pretheoretically, Perry (1979) noted that it was a problem for the propositional doctrine of mental attitude inherited from Frege, since the thoughts are propositionally equivalent. This, in essence, is the *de se* attitude puzzle: How do we suitably revise our theory of mental attitudes to capture the first-personal nature of *de se*? The *de se* puzzle has attracted much attention in philosophy of mind literature (REFS), some of which I will review below.

The focus of this dissertation will not, however, be on *de se* attitudes, but on *de se* attitude ascriptions – our predications of various mental states to other sentient individuals. As Chierchia (1989) first noted, there are items in natural language that must be interpreted as unambiguously *de se* in cases of ascription; Chierchia’s own example comes from Italian:<sup>1</sup>

- (1) **S**<sub>1</sub>: Pavarotti is listening to himself singing *La donna e mobile* and is impressed by his own skill. He thinks, “I have to admit it: I really am a genius!”

---

<sup>1</sup>A word on example notation. I provide scenarios in sans-serif font to distinguish them from the target sentence, whose felicity I am trying to establish for the given scenarios. Where I mark felicity judgments (as in the example below),  $\checkmark S$  means the sentence is felicitous for scenario S, while  $\# S$  indicates infelicity; when I leave the example unmarked, it indicates that the example is felicitous for the given scenario.

S<sub>2</sub>: Pavarotti is listening to a performer singing *La donna e mobile*, and is impressed by his artistry. He thinks, “This performer is a genius! I could learn a lot from him.” Unbeknownst to him, he is the performer he is listening to.

- a. Pavarotti crede            di        PRO essere un genio  
 Pavarotti believe-PRES COMP PRO to-be a genius  
 ‘Pavarotti believes, “I am a genius.” ’ [✓S<sub>1</sub>, #S<sub>2</sub>]
- b. Pavarotti crede            che gli e            un genio  
 Pavarotti believe-PRES that he be-PRES a genius  
 ‘Pavarotti believes that he is a genius. ’ [✓S<sub>1</sub>, ✓S<sub>2</sub>]

Thus, the sentence is only acceptable as a report of Pavarotti’s *de se* belief “I am a genius.” This is not the case with the finite form, which can ascribe either a *de se* belief or a non-*de se* belief to Pavarotti. Thus, PRO is obligatorily interpreted *de se*, in contrast to normal pronouns, which seem to have optionality. Since Chierchia’s discovery of PRO’s *de se* requirement, many other obligatory *de se* elements have been discovered, including West African logophors, shifted indexicals, and long-distance anaphora. The existence of these items raises three important questions:

- (2) DEDICATED LFS: Insofar as *de se* elements contrast with pronouns in optionality of *de se* ascription, is this evidence for dedicated LFs for *de se* elements?
- (3) HOW MANY *de se* LFS: If so, exactly how many *de se* LFs are there?
- (4) *de se* PRONOUNS: What ramifications do these items have for pronouns themselves – are the *de se* compatible pronouns an instance of vagueness or ambiguity of logical form?

The aim of this dissertation is to try and answer these questions. I will claim that there are three ways to *de se* readings. The first way, which I will argue is true universally for pronouns, is that *de se* is a species of *de re*; this is what happens for *gli* in (1b). However, I will argue that there are, in addition to the *de re* default case, two dedicated *de se* logical forms. The first, following Chierchia (1989) will be a syntactic representation, where the *de se* element is bound by an operator within the scope of the attitude verb:

- (5) att-holder V<sub>att</sub> [OP<sub>i</sub> . . . x<sub>i</sub>]

I will argue that this syntactic condition is diagnosable by an intervention effect that arises when a *de se* anaphor is c-commanded by a *de re* counterpart:

- (6) *De Re* BLOCKING EFFECT  
 No (syntactic) *de se* anaphor can be c-commanded by a *de re* counterpart.

In this chapter, I will show that the *De Re* Blocking Effect holds both for English dream report pronouns and Yoruba logophors. As an illustration of the phenomenon, consider Lakoff’s famous dream-report sentence:

- (7) I dreamed I was Brigitte Bardot and I kissed me. (Lakoff, 1972)

This sentence is unambiguous regarding who is kissing whom in the dream – it must be the Bardot kissing Lakoff (i.e., the speaker). This is an instantiation of the *De Re* Blocking Effect. I will argue that this effect arises because of a preference for local binding, which forces a *de se* variable to be bound by a *de re* pronoun, thus blocking the operator-variable chain.

In chapter 2, I will take up the case of languages which allow *indexical shift*, a process whereby the reference of indexical items (items such as *I*, *you*, *today*, and *here*) can be altered underneath certain attitude predicates. Consider, for instance, the following example from Zazaki, an Indo-Iranian language:

- (8) Rojda ne va ke mi kes paci kerd  
 Rojda not said that I anyone kiss did  
 ‘Rojda didn’t say that {she, I} kissed anyone.’ (Anand and Nevins, 2004)

As the translation indicates, the sentence is ambiguous between English indirect discourse and pseudo-direct discourse (For no X did Rojda say, “I kissed X.”). I will argue, following (Anand and Nevins, 2004), that indexical shift arises not via binding in the syntax but by overwriting of a parameter of the semantic evaluation sequence. Specifically, I will argue that indexical shift arises via overwriting of the *context* parameter (Kaplan, 1989), which serves as the locus for indexical items:<sup>2</sup>

- (9) Zazaki overwriter:  $[[OP_V[\lambda\langle spkr, world, time \rangle \alpha]]]^{c,g} = [[\alpha]]^{\langle spkr, world, time \rangle, g}$

Following Lewis (1979); Cresswell (1985), let us assume that attitude predicate complements are sets of centered worlds, which are triples of individuals, worlds, and times, corresponding to the attitude-holder’s *de se* coordinates. The operator  $OP_V$  simply overwrites the context with the centered coordinates, thus allowing *ez* ‘I’ in Zazaki to change its value from the utterance author. This account predicts that shifted indexicals should not show sensitivity to the *De Re* Blocking Effect, which is correct.

In the final chapter, I will consider the case of long-distance anaphora. I will argue that both operator-binding and context-shifting approaches are cross-linguistically, based on the tests generated in chapters 1 and 2. The main focus of the chapter will be Mandarin long-distance *ziji*. I will show that speakers split on crucial tests for operator-binding and context-shifting, leading me to posit that, in fact, both methods are attested in long-distance anaphoric “binding.” I will then generalize this, showing that while Malayalam *taan* classes with shifting indexicals, Japanese *zibun* and Icelandic *sig* pattern with logophors.

The proposal may be tabulated as follows:

	CLASS	METHOD	MEMBERS
	Default	<i>de re</i> ascription	pronouns
(10)	Semantic	context-overwriting	shifted indexicals, Mandarin <sub>1</sub> <i>ziji</i> , Malayalam <i>taan</i>
	Syntactic	binding by operator	Yoruba <i>oun</i> , English dream-selves, Icelandic <i>sig</i> , Japanese <i>zibun</i> , Mandarin <sub>2</sub> <i>ziji</i>

<sup>2</sup>This is not precisely the denotation I will assume in Chapter 2; I have adapted it to an extensional setting for perspicuity.

Here ends the dissertation summary. In the remainder of this chapter, I will consider three extant arguments for dedicated *de se* LFs. The first, due to Chierchia, is the presence of elements in natural language that are obligatorily interpreted. How can their interpretation be constrained without a specified LF? Answering this question will take us over into the murky waters of *de re* ascription, which I will show are murky enough to grant these elements their interpretation without positing specific LFs for them. I will then turn to two recent arguments due to Percus & Sauerland. The first, concerning the possibility of *de se* readings in negatively quantified contexts, I will argue is dubious, and ascribe it to the nature of the context-dependence of *de re* ascription. The second, concerning the interpretive constraints on dream-report pronouns, I will argue is convincing, and demonstrate how a syntactic solution naturally accounts for it. In section 5, I will summarize the system that the argumentation in this chapter leads me to adopt. In the final section, I will close with two loose ends that the present proposal does not capture.

## 1.2 On *de se* belief

Let me begin by returning once more to John, standing in the murky club with his pants in flames. Recall that John mistakes his reflection in the mirror for an actual person and thinks, “His pants are on fire!”, and then, upon smelling smoke and feeling some unexpected heat around his ankles, thinks more alarmingly, “My pants are on fire!” As (Perry, 1979) points out, it would seem that John’s beliefs change between seeing the reflection and smelling the smoke, since his actions (assuming he is acting rationally) will differ: in the former case he might run over to help the man put out the fire, and in the latter, stop, drop, and roll.

But this is a problem for the Fregean concept of mental attitudes, under which belief is a relation between an individual and a proposition (in a given world  $w$ ):  $BELIEVE_w(\text{John}, p)$ , where  $p$  is the relevant proposition. The problem for this picture is that the propositions expressed by *his pants are on fire* and *my pants are on fire* will be the same. To show this, I will need to make some concrete assumptions. Let us suppose that propositions are sets of possible worlds. This gives us the following (ignoring tense):

$$(11) \quad p = \llbracket(\text{that}) \text{His}_i \text{ pants are on fire.}\rrbracket^g = \{w: g(i)\text{'s pants are on fire in } w\} = \{w: \text{John's pants are on fire in } w\}.$$

Further, following Hintikka (1962), let us assume that  $BELIEVE$  is defined in terms of doxastic alternatives as follows:

$$(12) \quad BELIEVE_w(a, p) \text{ iff. } \{w' \mid w' DOX_a w\} \subseteq p, \text{ where } w' DOX_a w \text{ iff } w' \text{ is compatible with } a\text{'s beliefs about the world in } w. w.$$

Now I need to say something about the denotation of the indexical  $I$ . In Chapter 2, I will consider the status of indexical elements in detail, but let me suppose for the sake of argument that the contextually supplied assignment function  $g$  has a designated slot 0 that is identified with the sentence utterer (or believer, in this case):

$$(13) \quad \llbracket I \rrbracket^g = g(0).$$



With this in place, the puzzle is apparent – the propositions are identical, assuming that  $g(i)=g(0)$ :

- (14)  $p' = \llbracket(\text{that}) \text{ my pants are on fire.} \rrbracket^g = \{w: g(0)\text{'s pants are on fire in } w\} = \{w: \text{John's pants are on fire in } w\}$ .

But then  $p = p'$ , hence John's belief state has not changed, contrary, apparently, to fact. As Perry diagnoses, the problem lies with the indexical element  $I$  itself, which he claims is "essential" for expressing the particular belief corresponding to "My pants are on fire." That is, there is no way to replace *my* in this example by a co-referring term (i.e., *John, the man at the far corner of the room*) and still preserve the belief. The belief that arises is extricably about the self, hence, following the terminology of Lewis (1979), *de se*. Lewis (1979) himself gives one of the clearest demonstrations that *de se* belief does not involve propositions à la sets of possible worlds. Consider a world in which there are two gods with different properties: Yahweh lives on Ararat and throws down manna, while Indra lives on Meru and throws down thunderbolts. Now, both of them are propositionally omniscient, and thus know that Indra lives on Meru and throws thunderbolts and that Yahweh lives on Ararat and throws down manna. But, Lewis points out, one can imagine each of them ignorant about which one of Indra and Yahweh he is. If he is so ignorant, that knowledge must *a fortiori* be non-propositional, as they are propositionally omniscient.<sup>3</sup>

What then is the correct treatment of belief? Lewis proposes that it is properly self-ascription of a *property*, which in the Motogovian tradition we may represent as an element of type  $\langle e, st \rangle$ : a function from individuals to propositions.<sup>4</sup> Hence, the *de se* and non-*de se* beliefs come out to the following:

- (15) a.  $BELIEVE(\text{John}, \lambda x \lambda w. \text{his}_i \text{ pants are on fire in } w)$  non-*de se*  
 b.  $BELIEVE(\text{John}, \lambda x \lambda w. \text{my}_x \text{ in } w)$  *de se*

The non-*de se* property is a constant function from individuals to propositions, and thus its truth value will not depend on the self-ascriber. Such properties thus amount to propositional beliefs as analyzed following Hintikka (1962). In contrast, *de se* belief is crucially non-propositional, since *my* will vary depending on the self-ascriber.

---

<sup>3</sup>Here's Lewis's original story:

Consider the case of the two gods. They inhabit a certain possible world, and they know exactly which world it is. Therefore they know every proposition that is true at their world. Insofar as knowledge is a propositional attitude they are omniscient. Still I can imagine them to suffer ignorance: neither one knows which of the two he is. They are not exactly alike. One lives on top of the tallest mountain and throws down manna; the other lives on top of the coldest mountain and throws down thunderbolts. Neither one knows whether he lives on the tallest mountain or on the coldest mountain, nor whether he throws down manna or thunderbolts...If the gods came to know which was which, they would know more than they do. But they wouldn't know more propositions. There are no more to know.(Lewis, 1979, p.520-1)

<sup>4</sup>Lewis characterizes properties as descriptions of chunks of logical space. In typical modal cases, the chunk of logical space described will be a set of worlds, such as the ones where, for instance, John's pants are on fire; these will correspond to non-*de se* beliefs. On the other hand, Lewis argues, properties can describe chunks of spatio-temporal space as well, which he argues will give rise to *de se* belief. I personally find such ideas obscure, especially given their basis in modal realism, so I will dispense with them here.

This system requires a new semantics for *BELIEVE*. Following Quine (1969); Cresswell and von Stechow (1982), let us represent doxastic alternatives as individual-world pairs, or, *centered possible worlds*. Then we have the following revised semantics for *BELIEVE*:

- (16)  $BELIEVE_w(a, \omega)$  iff.  $\{\langle w', a' \rangle \mid \langle w', a' \rangle DOX_a \langle w, a \rangle\} \subseteq \omega$ , where  $w', a' DOX_a \langle w, a \rangle$  iff  $\langle w', a' \rangle$  satisfies all properties  $a$  self-ascribes in  $w$ .

In the above, all that has been done is to systematically replace possible worlds with centered possible worlds (including revision of the compatibility condition for doxastic alternatives).

Let me summarize this setup. I began with the observation that some thoughts are inextricably *de se*, a clear problem for the characterization of mental attitude that we owe to Frege. Following Lewis, I showed how one concrete way to treat this problem was to suitably enrich the object of belief from a proposition to a property.

### 1.2.1 On *de se* ascription

While the essential indexical problem is compelling for the characterization of belief, it is important to separate the logic of mental attitudes and the logic of attitude *ascription*, which is a properly linguistic phenomenon. Indeed, on first blush, the linguistic significance of the puzzle of *de se* attitudes is questionable, given that in attitude ascription the *de se*/non-*de se* distinction vanishes. Consider the example below, where both a *de se* and a non-*de se* belief ascription can be reported with the same sentence.

- (17) While camping last summer, John and his friends found a 100 foot cliff overhanging a deep lake. They set up a camcorder at the bottom and proceed to dive off the clifftop. John performs a very difficult dive (say, a backwards somersault). Upon reviewing the footage months later, he discovers that the height of the cliff obscured the identity of the divers.

$S_1$ : Remembering that only he did a backwards somersault, John thinks, "I had the best dive."

$S_2$ : Highly impressed by the backwards somersault, John thinks, "That guy had the best dive."

John<sub>*i*</sub> believed that he<sub>*i*</sub> was the best diver. [ $\checkmark C_1, \checkmark C_2$ ]

Thus, while John's *de se* belief (in  $S_1$ ) and non-*de se* belief (in  $S_2$ ) are arguably as different as those in the flaming pants and ignorant gods examples above, both beliefs can be ascribed to John by the sentence in (17). It thus appears that a distinction relevant for *mental attitude* does not translate into a concomitant distinction for mental attitude *ascription*.

However, appearances change once one begins to look outside indirect discourse *per se*. Thus Morgan (1970) and Chierchia (1989) discovered natural language terms that are obligatorily interpreted *de se* in intensional contexts. The classic case, first noted by Morgan, is subject control PRO. Consider again the case of our cliff-diving friend John, but now with a little post-performance comparison:

- (18) John and his friends review the cliff-diving footage a few months later. While they cannot determine the identities of the divers from the footage, they decide to collectively rate the best diver.

$S_1$ : Remembering that only he did a backwards somersault, John thinks, "I was the best diver."

S<sub>2</sub>: Highly impressed by the backwards somersault, John thinks, “That guy was the best diver.”

- a. John<sub>i</sub> wants PRO<sub>i</sub> to be voted the best diver. [ $\checkmark$ C<sub>1</sub>, #C<sub>2</sub>]
- b. John<sub>i</sub> wants himself<sub>i</sub> to be voted the best diver [though doesn’t know it]. [ $\checkmark$ C<sub>1</sub>, (?) $\checkmark$ C<sub>2</sub>]<sup>5</sup>

As indicated above, the subject control form in (18a) is only compatible with the scenario where John is attributed the *de se* belief expressed with the indexical pronoun *I*, while the ECM control condition is also compatible with the scenario where John does not have a *de se* belief.

The reaction of Chierchia (1989) to this condition was to partially accept Lewis (1979)’s PROPERTY THESIS: where *de se* interpretation is necessary, posit a property complement, otherwise a propositional complement. Thus, we have the following two lexical entries for *want*, corresponding to the two *BELIEVES* above:<sup>6</sup>

(19) [ $\text{want}_{\text{proposition}}$ ]<sup>g</sup> =  $\lambda p_{st} \lambda x \lambda w. 1$  iff.  $\{w' \mid w' \text{BOUL}_x w\} \subseteq p$ .

(20) [ $\text{want}_{\text{property}}$ ]<sup>g</sup> =  $\lambda \omega_{est} \lambda x \lambda w. 1$  iff.  $\{\langle w', x' \rangle \mid \langle w', x' \rangle \text{BOUL}_x \langle w, x \rangle\} \subseteq \omega$ .

Correspondingly, Chierchia assumes that obligatorily-controlled PRO is necessarily operator-bound in the syntax:<sup>7</sup>

(21) John wants [<sub>CP</sub> OP<sub>i</sub> PRO<sub>i</sub> to be voted the best diver].

Let me assume a little more articulation of structure in order to interpret this properly. For perspicuity, I will assume the extensional system of modal quantification of Percus (2000), in which case modals (including attitude verbs) introduces a world binder, as does the matrix clause; these obligatorily bind the world variable directly beneath them. If we assume that the operator introduced by *want* is situated above the world binder, (21) is transformed as follows:

<sup>5</sup>The literature is divided about whether ECM constructions allow non-*de se* readings for anaphoric embedded clause subjects (yes: REFS; no: REFS). While I have encountered informants for whom such readings are degraded (as indicated above), I have not found speakers for whom a quantificational subject is illicit in scenarios where a portion of the domain of quantification is attributed a non-*de se* belief. Concretely speaking, suppose that in the scenario above we introduce one of John’s fellow diving friends, Peter. Then we have the following contrast between control and ECM complements:

- (i) S<sub>1</sub>: Both John and Peter remember their dives and (each) think, “I was the best diver.”
- S<sub>2</sub>: Peter thinks, “I was the best diver.” John thinks (about himself), “That guy was the best diver.”
- a. [Each of them]<sub>i</sub> wants PRO<sub>i</sub> to be voted the best diver. [ $\checkmark$ C<sub>1</sub>, #C<sub>2</sub>]
- b. [Each of them]<sub>i</sub> wants himself<sub>i</sub> to be voted the best diver [though John doesn’t know it]. [ $\checkmark$ C<sub>1</sub>,  $\checkmark$ C<sub>2</sub>]

I take this to mean that ECM complements are in fact interpretable *de re*, though the strong preference for *de se* interpretations is worthy of future study. Kier Moulton (p.c.) tells me that his informants show a stronger preference for *de se* readings with epistemic modals (e.g., *believe*, *think*, etc.); I have found no distinction in the quantificational test above. This undoubtedly should tie into the fact (noted by Chierchia (1989)) that *de se* readings are somehow primary, even for the case of clausal complements.

<sup>6</sup>*BOUL<sub>x</sub>* stands for the bouletic relation, which concerns *x*’s desires in *w*.

<sup>7</sup>Note that I have not represented a control relation specifying the operator’s range. I assume that this is a product of the denotation of the attitude verb itself.

(22)  $\lambda w w$  John wants [<sub>CP</sub> OP<sub>i</sub>  $\lambda w' w'$  PRO<sub>i</sub> to be voted [the best diver  $w'$ ]].

In (22), I have included the relevant world binders for the main predicate and the definite description for explicitness. Assuming that null-operator is an instance of lambda abstraction, as in (23), we derive the property in (24) for the embedded CP:

(23)  $[[\text{OP}_i \alpha]]^g = \lambda x. [[\alpha]]^{g[i/x]}$ .

(24)  $\lambda x \lambda w'. 1$  iff.  $x$  is voted the best diver in  $w'$ .

As  $\text{want}_{\text{property}}$  quantifies over  $\langle w', x' \rangle$  pairs, it will ensure that the property is evaluated with respect to John's *de se* counterparts. Thus, we have derived that *want* when it takes a control complement is obligatorily *de se*.

It is important to note that this argument (if something is obligatorily interpreted *de se* in attitude contexts, abstract over it) can extend both to times of attitudes and to addressees. Consider the case of *de te* (addressee *de se*) attitudes first, which we can diagnose with object control communication verbs (Schlenker, 1999). Following the logic above for subject control, *de te* attitudes crucially involve the essential indexical *you* in the attitude; hence, the experiment to set up involves a case where a speaker speaks to an addressee about someone who, unbeknownst to the speaker, is in fact the addressee.

(25) John is hosting a party. He hears that a certain waiter named Bill is being a nuisance.

S<sub>1</sub>: John tells the nearest waiter, "Bill has to go." Unbeknownst to him, he's talking to Bill.

S<sub>2</sub>: John tells Bill, "You have to go."

a. John told Bill<sub>i</sub> that he<sub>i</sub> had to leave. [ $\checkmark$ S<sub>1</sub>,  $\checkmark$ S<sub>2</sub>]

b. John told Bill<sub>i</sub> to PRO<sub>i</sub> leave. [#S<sub>1</sub>,  $\checkmark$ S<sub>2</sub>]

*de se* only

As was observed with the case of subject control PRO, the finite form in (25a) is acceptable in S<sub>1</sub>, where John's order involves a non-*de te* attitude towards Bill. However, in such a scenario, (25b) is unacceptable, indicating that it must be read *de te*.<sup>8</sup> Thus, as object control PRO underneath attitude verbs is obligatorily interpreted *de te*, it seems that abstraction over an *addressee* is also available within the grammar.

Finally, consider the case of *de nunc* (temporal *de se*) attitudes. Continuing the schema above, tests for obligatory *de se* will involve cases where an attitude holder has an attitude about the time of the attitude without knowledge that it's about the time of the attitude (thus, a non-*de se* thought).

<sup>8</sup>Gennaro Chierchia (p.c.) suggests that the putative *de te* contrast merely diagnoses John's failure to setup a suitable psychological state (e.g. *I should leave!*) in Bill's mind. However, it is quite possible that John's statement *would* cause the appropriate state, assuming, for instance, a scenario where John is known for outbursts of violence. And, concomitantly, in cases of acceptable object control communication verbs, there need be no appropriate attitude ascribed to the object, thus the acceptability of *John told Bill to leave, but Bill couldn't hear him.* Chierchia is right, however, in that this effect is linked particularly to attitude object control verbs. Thus, causatives (e.g., *force, cause to*) do not show this effect. Furthermore, as Chierchia (1989) points out, psychological causatives such as *persuade* and *convince* are best classed as a causative *subject* control verb, given both that the matrix subject need not be an attitude holder (*The constant noise from the upstairs apartment finally convinced me to leave.*) and that the object shows *de se* effects (*John's winning the best diver competition convinced him to become a professional diver.* is illicit in the non-*de se* diving scenario in (17).).

- (26) John wakes up at 4 a.m., hears a dripping noise, and says to himself “It’s raining.” He also thinks it’s before 4 a.m. (maybe his dog wakes him up at 4 usually).

At 4 a.m., John believed it to be raining. (Fintel, 2005)

Until now, I have said nothing about the nature of temporal reference. I will temporarily fix ideas as follows:

(27) A TOY TENSE SEMANTICS

- a. temporal operators (PAST, FUT, frame adverbials) quantify over times,  $t$ :

i.  $\llbracket \text{PAST} \rrbracket^g = \lambda P_{it} \lambda t. 1$  iff.  $\exists t' [t' < t \wedge P(t') = 1]$ .

ii.  $\llbracket \text{FUT} \rrbracket^g = \lambda P_{it} \lambda t. 1$  iff.  $\exists t' [t' > t \wedge P(t') = 1]$ .

iii.  $\llbracket \text{At 4 a.m.} \rrbracket^g = \lambda P_{it} \lambda t. 1$  iff.  $P(t \cap 4a.m.) = 1$ .

iv.  $\llbracket \text{PRES} \rrbracket^g = \lambda P_{it} \lambda t. 1$  iff.  $P(t) = 1$ .

- b. attitude verbs do *not* shift  $t$ , but are evaluated at  $t$ :

$\llbracket \text{believe} \rrbracket^g = \lambda p_{st} \lambda x_e. \forall w' \in BEL_{x,w,t} [p(w') = 1]$ .

- c. Truth of an utterance: at the matrix level, identify free  $t$  with  $t@$ , the utterance time.

Given this toy tense semantics,  $\llbracket \text{PAST}[\text{at 4 a.m.}[\alpha]] \rrbracket^g = 1$  iff.  $\exists t' < t [\llbracket \alpha \rrbracket^g(t' \cap 4a.m.) = 1]$ . Assume the following logical form for (26) (this LF assumes reconstruction of the subject for purposes of simplicity and that the tense of the infinitive is PRES):

- (28)  $[_{TP} \text{PAST} [ [\text{at 4 a.m.}] [\text{John believe} [\text{PRES it be raining}]]]]$

Then, given that attitude verbs do not quantify over times, for (26) to be true,  $\exists t' < t@ BEL_{John,w@,t' \cap 4a.m.} \subseteq \{w \mid \text{it is raining at } t' \cap 4a.m. \text{ in } w\}$ : and thus as far as John’s beliefs are concerned, it must be raining at 4 a.m. However, note that under the scenario above, in John’s belief worlds, it is not, in fact, 4 a.m. Thus, the semantics above predicts that (26) should be false in the scenario above. But, in fact, the sentence is perfectly acceptable in this situation.

Following the logic above for the case of subject and object control, we can conclude that attitude verbs can quantify over times as well, or, following Lewis (1979), that the complements of attitude verbs can be “world-time slices” of individuals.

In summary, the problem of obligatory *de se* reference ramifies throughout the grammar: it can occur with speakers, addressees, and times. Following Chierchia’s suggestion, it is thus tempting to conclude (a) that attitude verbs allow complements that are properties of times or properties of individuals (or, in the case of Italian *credere*, both), and (b) that the relevant *de se* items are operator-bound via a dedicated *de se* LF, and thus that there are distinct logical forms for *de se* belief attribution. However, note that these are separate claims: it might be possible to derive *de se* readings from the grammar without actually postulating binding. In order to consider this option better, let us once more attend to constructions with a finite complement, which were shown to be compatible with both *de se* and non-*de se* ascriptions.

- (29) John believes that his pants are on fire.

Under Chierchia’s analysis, this sentence has two distinct logical forms: one where the embedded *he* is bound by the matrix subject *John* and one where it is bound by a lambda abstractor introduced in the embedded C position.

- (30) a. John  $\lambda x$  believes that his<sub>*x*</sub> pants are on fire.  
 b. John  $\lambda x$  believes  $\lambda y$  that his<sub>*y*</sub> pants are on fire.

But consider the non-*de se* reading. Until now, I have been silent on how the pronoun *his* is interpreted within the attitude environment. However, note that it can be replaced by a co-referential description while still preserving truth value. To wit, *his* can be replaced by *the man who’s looking at himself in the mirror* and the sentence is still acceptable; such is not the case with the *de se* reading. The substitution of co-referring terms without effect of truth value is the hallmark of *de re* ascription. Perhaps then we can characterize *de se* belief as a species of *de re* belief in these cases. In order to explore this, it is important to consider *de re* ascription in more detail.

### 1.2.2 De re belief

The *loci classici* for the problems of *de re* belief are a series of papers by Quine. Quine (1953) notes that the following statements are not inconsistent:

- (31) a. Philip believes that Cicero denounced Cataline.  
 b. Cicero is Tully.  
 c. Philip believes that Tully did not denounce Cataline.

Thus belief contexts violate the law of Indiscernability of Identicals, which states that co-referential terms may be substituted in a predicate logic without alteration of truth value:<sup>9</sup>

- (32) INDISCERNABILITY OF IDENTICALS  
 $x = y \Rightarrow \forall P[P(x) = P(y)]$

From the Cicero-Tully puzzle in (31), Quine concludes that belief contexts are *referentially opaque*, in that the Indiscernability of Identicals is *always* violated. However, such a conclusion is somewhat hasty, given that there are many cases where substitution within a belief context can indeed be made without alteration of truth value.

- (33) Susan Hockfield is the current MIT President. John, who left MIT some years ago, thinks that Charles Vest is still President. On a visit back to MIT, John strikes up a conversation with President Hockfield at a coffee stand, and finds her quite friendly.  
 John believes that {Susan Hockfield, the President of MIT} is friendly.

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<sup>9</sup>Quine (1953) traces this principle back to Leibniz (Loemker, 1969, p. 380).

In John's belief worlds, Susan Hockfield is not the President of MIT, yet the substitution of the definite description is licensed. Following Russell (1905), this has been argued to be because the definite is co-referential with the proper name *outside the scope of the belief operator*, and hence the definite is itself interpreted outside the scope of the intensional operator. Within an intensional logic, this is usually accomplished by scoping the definite out of the scope of the attitude verb in the object language (i.e., at LF). With an extensional logic, this can be accomplished by simply choosing the relevant world binder:

(34)  $[\lambda w w \text{ John thought } [\lambda w' w' [\text{the President } w] \text{ be friendly}]]$

However, as Quine (1956) pointed out, the scope-taking approach cannot by itself be maintained, given that an attitude holder might construe a *res* under different guises, and thus come to believe properties that are contradictory of the *res* (Klein (1979) termed such examples 'double-vision' puzzles). Here is Quine's Ralph-Ortcutt example:

There is a certain man in a brown hat whom Ralph has glimpsed several times under questionable circumstances on which we need not enter here; suffice it to say that Ralph suspects he is a spy. Also there is a grey-haired man, vaguely known to Ralph as rather a pillar of the community, whom Ralph is not aware of having seen except once at the beach. Now Ralph does not know it but the men are one and the same[, namely Bernard Ortcutt]. (Quine, 1956, p. 56)

Under the scope-taking approach to *de re* interpretation, if we ascribe a thought to Ralph regarding Ortcutt (say, *Ralph believes that Ortcutt is a spy*), the DP Ortcutt must move out of the scope of the belief operator, leaving a variable behind. Now consider the fact that both of the above sentences are acceptable:

- (35) a. Ralph believes that Ortcutt is a spy.  
 b. Ralph believes that Ortcutt is not a spy.

Both sentences express *de re* beliefs of Ralph's, and hence both will necessitate movement of the embedded DP out of the belief context. In one case the logical form below believe will be [ $x$  is a spy] and in the other [ $x$  is not a spy]; as in both instances  $x$  will be bound by Ortcutt, this will end up ascribing contradictory beliefs to Ralph (it should be clear that this problem is replicated for the world-binding approach). And yet, in the example, Ralph does not have contradictory beliefs; he is simply unaware that the man he has seen in two different circumstances is in fact the same person.

### Relations of Acquaintance

What exactly does Ralph believe? Intuitively, he believes both *The man in the brown hat is a spy* and *The man with grey hair on the beach is not a spy*. What he does not believe (or, rather, know) is that *the man in the brown hat* and *the man with grey hair* are the same individual in the actual world. This is the intuition behind Kaplan (1969)'s solution to Quine's puzzle: *de re* ascription is

simply a species of *de dicto* ascription under a suitable description D, with the crucial proviso that when D is evaluated in the matrix world it yields the *res*. Kaplan argues that the representation for the Quine examples is as follows:

$$(36) \quad \exists\alpha[R(\alpha, \text{Ortcutt}, \text{Ralph}) \wedge \text{Bel}(\text{Ralph}, \text{“}\alpha \text{ is a spy”})]$$

In the above  $\alpha$ , which Kaplan terms a ‘name’ is the description D. The *Bel* relation serves to provide the *de dicto* component of *de re* ascription, characterizing Ralph as believing “ $\alpha$  is a spy.” The key work then is done by the *R*, which is a representation relation that must meet the following criteria:

- (37)  $R(\alpha, x, y)$  iff.
- a.  $\alpha$  denotes  $x$ ,
  - b.  $\alpha$  is a name of  $y$  for  $x$ ,
  - c.  $y$  vividly associates  $\alpha$  with  $x$ .

Let me put aside the vividness restriction for the moment, and try to spell out this proposal a bit more. Under Kaplan’s theory, attitude verbs are no longer 2-place (between a proposition and an attitude holder), but 3-place, between a *res*, a property, and an attitude holder; in Kaplan’s representation the property is obscured by the sententialist treatment of belief, but note that the object of belief is clearly composed of two elements,  $\alpha$  and a predicate derived from the ascription. Thus, it might be more perspicuous to represent the second conjunct as  $\text{Bel}(\text{Ralph}, \alpha, \lambda x \lambda w. x \text{ is a spy in } w)$ . Finally, a word about  $\alpha$  itself: while Kaplan says it denotes an individual, it must also be able to be interpreted *de dicto*. Thus, within the possible worlds framework, it is a concept, of type  $\langle se \rangle$ . A question I will not deal with here is the theory of what may serve as a suitable concept; it is an extremely thorny issue. As Kaplan (1969) observes, Ralph cannot believe Ortcutt is a spy *qua* the shortest spy. Kaplan thus constrains the description to be *vivid*, in that it must be made manifest to the attitude-holder; Lewis (1979) states that the attitude-holder must be causally acquainted with the *res* under the description. Both of these proposals are meant to rule out *the shortest spy* as a suitable description (at least for belief). This seems somewhat hasty, since I believe that such a description is suitable in many circumstances:

- (38) Ralph believes that the shortest spy is 3 feet tall. Unbeknownst to him, Ortcutt is the shortest spy.  
Ralph believes that Ortcutt is 3 feet tall.

Indeed, most demonstrations of representations which are not vivid are confined to cases which are blatantly tautological, and thus it is possible that the constraints on suitability are essentially pragmatic (i.e., adjudicated by the Maxim of Quantity); see Van-Rooy (1997); Aloni (2000) for attempts in this line.<sup>10</sup>With this in place, we may translate Kaplan’s original formulation as follows

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<sup>10</sup>Abusch (1997) considers a potential counterexample to this claim. Imagine that, following the local lottery, Mary believes that the winner, whoever he is, is happy. She claims that *Mary believes that Bill is happy* cannot be used in such a context. I am not sure. Suppose that Mary has expressed to me (with some jealousy) how happy the winner must be to win all this money. In a later conversation with Bill, I discover that he is the winner, and that he is actually quite terrified of dealing with headaches that invariably follow lottery winners. It seems quite felicitous for me to tell him, “Well, this will please Mary; she thinks you’re the happiest man in the world right now.”



(Heim, 1994):<sup>11</sup>

- (39)  $[[\text{believe}]^g = \lambda res_e \lambda P_{est} \lambda att_e \lambda w : g(D_i)(w) = res \text{ and } D_i \text{ is suitable.}$   
 $1 \text{ iff. } \forall w' DOX_{att} w [P(D_i(w'))(w') = 1].$

This function is three-place as desired; note that for this denotation to work, the *res* must sideways-move out of the embedded clause into an argument position of believe. I will not criticize this approach, since an account of Kaplan's system without something akin to this movement has not been adequately worked out.

Heim analyzes  $\alpha$  as a contextually-given concept, here represented as a free concept variable  $D_i$ . Note that for Kaplan it was existentially bound. As I will discuss shortly, the choice between these is a vexing question. However, to continue with the translation, note that the representation relation  $R$  is now encoded as a presupposition of believe.  $g(D_i)(w) = res$  encodes the denotation condition, while the suitability condition is meant to capture that  $D_i$  is a vivid name for the attitude holder. For (35a), we have already determined a plausible one:  $[\lambda w'. \text{the man in the brown hat in } w']$ , which does denote Ortcutt in  $w@$ . One further issue: it is often stated that  $D_i$  is subject to a definedness condition that it is defined for all accessible worlds of  $x$ ; this need not be stated, since if it is not defined, the predicate will have no truth value, violating the truth condition. Hereafter, I will ignore this requirement for this reason.

We are now at a stage to consider cases of *de re* belief by an attitude-holder of himself. Consider the case of John the diver, who thinks that the backwards somersaulter is the best diver.<sup>12</sup> Then a suitable concept is  $f_{\text{somersault}} = [\lambda w''. \text{the backwards somersaulter in } w'']$ . Indeed,  $f_{\text{somersault}}(w) = \text{John}$ , as demanded by the presupposition. Thus, given the LF below, we obtain the following truth-conditions:

- (40)  $\lambda w w \text{ John } \lambda x [x [\text{believes he}_x][\lambda y \lambda w'. w' t_y \text{ is the [best diver } w']]]$   
(41)  $[[\text{believe}]^g(\text{John}_{res})(\lambda y \lambda w'. y \text{ is the best diver in } w')(\text{John}) \text{ is defined iff.}$   
 $f_{\text{somersault}}(w) = \text{John}_{res} \text{ and } f_{\text{somersault}} \text{ is suitable.}$

Where defined,  $[[\text{believe}]^g(\text{John}_{res})(\lambda y \lambda w'. y \text{ is the best diver in } w')(\text{John}) =$   
 $1 \text{ iff. } \forall w' DOX_{John} w [((\lambda y \lambda w'. y \text{ is the best diver in } w')(f_{\text{somersault}}(w'))(w') = 1], \text{ or}$   
 $1 \text{ iff. } \forall w' DOX_{John} w [((\lambda y \lambda w'. y \text{ is the best diver in } w')(\lambda w''. \text{the backwards somersaulter}$   
 $\text{in } w''(w'))(w') = 1], \text{ or}$   
 $1 \text{ iff. } \forall w' DOX_{John} w [\text{the backwards somersaulter in } w' \text{ is the best diver in } w'].$

The last line characterizes the *de dicto* belief that John has, which is exactly what is wanted here. What about *de se*? Can it be treated similarly? Intuitively, what one would want to use is a SELF concept, representing a kind of primitive identity. Reinhart (1990) explicitly suggests that

<sup>11</sup>Heim, following Abusch, quantifies over world-time pairs in order to derive the temporal *de se* effects above; I have left this out because we are currently trying not to make the complements of attitudes properties of times.

<sup>12</sup>I deliberately side-stepped discussing the classic *John believes that his pants are on fire*. because it is quite difficult to find an appropriate linguistic concept. It is often stated that a salient concept of the scenario is  $f_{\text{mirror}} = [\lambda w''. \text{the man in the mirror in } w'']$ . But while  $f_{\text{mirror}}(w) = \text{John}$ , it is not clear that  $f_{\text{mirror}}(w')$  is even defined in John's doxastically-accessible worlds, given that in such worlds there is no mirror in front of him. I presume that ultimately the correct concept is perceptual (the individual who corresponds to that percept).

in *de se* beliefs “the relevant name here would be ‘I,’” but it is unclear how this would work, since ‘I’ does not denote the attitude holder in  $w@$ .<sup>13</sup>

What we need, of course, is some way of making reference to the attitude-holder’s *de se* center. That is, we would like to represent identity as a description of the form  $f_{self} = [\lambda x \lambda w. \text{the } y = x \text{ in } w]$ . If, following Lewis and Chierchia, attitudinal quantification were over world-individual pairs, then this would give us the leverage to describe *de se* belief, since  $f_{self}(att)(w@) = att = \text{John}$ , but  $\forall \langle x', w' \rangle f_{self}(x')(w') = x'$ , which is the *de se* counterpart of John. It might seem at this point that we are giving up the game of assimilating *de se* to *de re*, but recall the distinction I made above between questions of what the objects of attitude predicates are and whether there is a binding relationship between an operator and a variable. We *can* assimilate *de se* and *de re* readings, but we must give up the propositional doctrine even for ascriptions. Thus, based on the evidence above regarding temporal and addressee *de se*, I will assume that the objects of attitude predicates are of type  $\kappa$ , where  $D_\kappa = D_e \times D_e \times D_s \times D_t$ , tuples of the form  $i = \langle author, addressee, time, world \rangle$ ; Indeed, this is Lewis’s own conclusion based on the existence of clearly *de se* ascriptions such as *Heimson thinks he’s Hume*. or *John thinks it is 4 a.m.*, where the embedded proposition would ordinarily be  $[\lambda w. 1 \text{ iff. Heimson=Hume in } w]$  or  $[\lambda w. 1 \text{ iff. } t@=4 \text{ a.m. in } w]$ , respectively. But these are essentially indexical thoughts; Heimson’s thought is “I am Hume,” a far more reasonable thought than the proposition above. Indeed, in this line, let me go further and assume that intensional quantification in general is over elements of type  $\kappa$ , which, following Lewis (1970); Scott (1970), I will call *indices*.

This move will allow the natural characterization of *de se* as *de re* belief under identity. First, a bit of notation. Let me define  $\text{AUTH} \langle author, addressee, time, world \rangle = author$ , and similarly for ADDR, TIME, WORLD; these simply extract the relevant coordinate from an index  $i$ .

Above, descriptions were of type  $\langle s, e \rangle$ . One might think that all we would need is to render them as type  $\langle \kappa, e \rangle$ , in line with the systematic replacement of world variables with a higher-order type. But this will not do on its own. Suppose that  $f_{self} = [\lambda i. \iota y = \text{AUTH}(i)]$ . This is, of course, AUTH itself. But  $\text{AUTH}(i@) = [I]^g$ , which is not the attitude-holder. Perhaps then we want  $f_{self} = [\lambda i. \iota y = \text{John}(i)]$ . But this will not yield the right result, only now for the *de dicto* case. Consider the Heimson-Hume example.  $f_{self}$  would return the Heimson in Heimson’s belief indices, which would not serve to characterize Heimson’s *de se* belief (since in those indices  $i'$ ,  $\text{AUTH}(i') \neq \text{Heimson}(i')$ ). What all of this suggests is that we must construct a *derived* index to evaluate with respect to for the presupposition. let  $i = \langle a, b, w, t \rangle$  be the index in which *be-*

<sup>13</sup>There is one possibility raised by Kaplan (1989, p. 554) as a treatment of indirect discourse. Kaplan’s idea is that *John said that p* means (very roughly) there is an utterance  $u$  that John made such that  $u$  expressed the proposition  $p$ . Formally, this is expressed as:

$$(ii) \quad [\text{say}]^g(p)(att)(w) = \exists \chi_{\kappa, \kappa} \exists c_\kappa [c \text{ is a context of } att\text{'s speech in } w \wedge \text{SAY}_c(att, \text{OP}_{diag}(\chi)) \text{ holds} \wedge \chi(c) = p].$$

Here SAY is defined as BELIEVE above, only it makes crucial reference (presumably) to utterance in  $w$  by *att*. This definition borrows notation from Chapter 2 regarding Kaplan’s theory of indexicality; please refer to it for definitions. The idea is that indirect discourse makes reference to utterances (hence characters) which evaluate to the embedded proposition. It should be noted, however, that as a semantics for belief, this is inexpressively weak, given that existential quantification over characters allows one to construct a character which trivially meets the conditions above. For indirect discourse this does not occur because SAY constrains the characters to be of utterances. See Stechow and Zimmerman (2004) for a thorough discussion of these issues.

lieve is evaluated. Then  $i_{dere} = \langle att, b, w, t \rangle$ , or  $i$  with  $att \mapsto AUTH(i)$ . Let me notate this as  $i[AUTH(i)/att]$ . With this,  $f_{self}$  may be safely identified with AUTH. Then the semantics for *de re* belief can be modified as follows:

- (42) a.  $[[\text{believe}]^g(res)(P_{e,\kappa t})(att)(i)]$  presupposes:  $f_j(\mathbf{i}[AUTH(\mathbf{i})/att]) = res$ , and  $f_j$  is suitable for  $att$ .  
 b.  $[[\text{believe}]^g(res)(P_{e,\kappa t})(att)(i)]$  asserts:  $1$  iff.  $\forall i' DOX_{att i}[P(f_j(i'))(i')] = 1$ .

Walking through this for *Heimson thinks he is Hume*. gives the following (assume that  $g(j) = AUTH$ ):

- (43) a.  $[[\text{believe}]^g(he_1)(\lambda x \lambda i'' .x \text{ be Hume in } i'')(Heimson_1)(i)]$  presupposes:  
 $AUTH(i[AUTH(i)/att]) = he_1 = Heimson$ , and AUTH is suitable for *Heimson*.  
 b.  $[[\text{believe}]^g(he_1)(\lambda x \lambda i'' .x \text{ be Hume in } i'')(Heimson_1)(i)]$  asserts:  
 $1$  iff.  $\forall i' DOX_{Heimson i}[(\lambda x \lambda i'' .x \text{ be Hume in } i'')(AUTH(i'))(i')] = 1$ , or  
 $1$  iff.  $\forall i' DOX_{Heimson i}[(\lambda x \lambda i'' .x \text{ be Hume in } i'')(AUTH(i'))(i')] = 1$ , or  
 $1$  iff.  $\forall i' DOX_{Heimson i}[AUTH(i') \text{ be Hume in } i']$ .

This is precisely what was needed to capture *de se* belief ascription. Hence, *de re* belief ascription can capture *de se* ascription as a special case, using the AUTH function. So, the revised definition for belief *de re* is as follows:

- (44)  $[[\text{believe}]^g = \lambda res_e \lambda P_{\kappa t} \lambda att_e \lambda i_{\kappa} : g(j)(i[AUTH(i)/att]) = res$  and  $g(j)$  is suitable.  
 $1$  iff.  $\forall i' DOX_{att i}[P(g(j)(i'))(i')] = 1$ .

Before moving on, it is important to point out one fact about *de re* ascriptions that the previous formulation masked. Note that  $f_{self}$  makes use of the individual slot; in the previous *de re* concepts I considered, there didn't seem to be any reference to the attitude-holder (or his *de se* counterparts); for example,  $f_{somersault}$  simply picks out the person who somersaulted in a world at some time. Thus, it might seem that we are complicating the system solely to capture *de se* ascription. Whether or not we are depends, in fact, how we encode the notion of suitability of a description. For Kaplan, as shown above, it is something imposed by the representation relation, which forces vividness. Lewis (1979), on the other hand, takes the suitability to part of the description itself. Consider the case of Ralph and Ortcutt *qua* spy. Above, it was suggested that *the man in the alley in WORLD(i) at 3 days before TIME(i)* would suffice. For Kaplan, vividness is presumably a property of the direct perceptual experience that Ralph had of Ortcutt. Lewis, however, would have it that the this perceptual experience be mentioned in the description, in which case once again we would need to make recourse to the attitude-holder and his *de se* counterparts. Thus,  $f_{alley} = [\lambda i. \text{ the man } AUTH(i) \text{ saw in } WORLD(i) \text{ 3 days before } TIME(i) \text{ in alley}]$ , in which case the description is egocentric, like  $AUTH(i)$ . It differs from *de se* descriptions in that the latter are purely *de se*, in the language of Stechow (1982). Pure *de se* are ones that depend entirely on the index argument, e.g. AUTH, ADDR, TIME. Thus, under this approach, all *de re* beliefs involve a *de se* description, just not necessarily a purely *de se* one.

## The problem of quantification

Recall that in Heim's formulation, the *de re* description is supplied by context, while Kaplan's employs existential quantification. Abusch (1997, fn. 9) provides two pieces of evidence in favor of the contextual approach. First, she notes that there are situations where one attributes a sequence of belief ascriptions to an attitude holder, and where the description appears to be constant throughout. Thus, for instance, one might have something of the following:

- (45) Ralph<sub>1</sub> believes that Ortcutt<sub>2</sub> is a spy. He<sub>1</sub> also believes he<sub>2</sub> is 6' tall, and that he<sub>2</sub> is has brown hair.

Suppose for concreteness that the alley in which Ralph sees Ortcutt is sufficiently dark to obscure his features appropriately, and that he therefore gets a glimpse of a 6' tall man with brown hair. In these situations, Abusch claims that the relevant relation is simply kept constant throughout the discourse. The claim seems to be that, in line with ordinary indefinites, this would not be the case if the descriptions were quantified over, given the familiarity effect of definites (Heim, 1982): when a discourse referent is familiar, an indefinite is infelicitous. However, it is important to note that this effect occurs precisely because there is a form that meets the familiarity presuppositions, namely, the definite. Indeed, as Matthewson (1998) demonstrated for Salishan languages, it is possible for a language's determiner system to lack a familiarity-induced opposition at all. Hence, this first argument in favor of the contextually-given approach seems suspect. Abusch's other argument is that the truth value of *Ralph thinks that Ortcutt is a spy* is contextually variable – it may be either true *or* false depending on the context. This is an extremely subtle judgment, and I am not certain how to test it, so I shall put it aside.

In addition, Zimmerman (1991) and Heim (1993) both present evidence against a simple-minded contextually-given description, based on sentences with quantificational attitude holders. Consider a variation on the Ralph-Ortcutt scenarios in which now there are two additional people, Alph and Dalph, who both see Ortcutt, though under different circumstances than Ralph:

- (46) Ralph sees Ortcutt in a dark alley, where only spies hang out. Alph sees Ortcutt standing outside a federal building, looking at his watch. Dalph sees Ortcutt reading a book on cryptography.

Each of them thinks that Ortcutt is a spy.

There is no one suitable description that can serve as a proxy for Ortcutt in Ralph's, Alph's, and Dalph's belief contexts. Thus, the analysis of *de re* ascription above is inadequate. Here, the existential approach advocated by Kaplan (and, after him Cresswell and von Stechow (1982)) correctly predicts that the sentence should be acceptable. Following the definition of *de re* ascription constructed for the contextual approach, we may construct one for the existential approach as follows:

- (47)  $[[\text{believe}]^g = \lambda res_e \lambda P_{\kappa t} \lambda att_e \lambda i_{\kappa}. 1 \text{ iff. } \exists D[D(i[\text{AUTH}(i)/att]) = res \wedge D \text{ is suitable} \wedge \forall i' DOX_{att} i [P(D(i'))(i') = 1]]]$ .

Thus, when this is embedded under a universal subject, the following is obtained:

- (48) LF:  $\lambda i [\text{each of them}_2] \lambda x i x \lambda y y [_{VP}[\text{believes Ortcutt}] [\lambda z \lambda i' [\text{a spy } i'] i' \lambda m t_z \text{ is } m ]]$

- (49)  $\llbracket \lambda i [\text{each of them}_2] \lambda x i x \lambda y y [VP] \rrbracket^g = \lambda i 1$  iff.  $\forall x [x \in g(2) \Rightarrow \llbracket [VP] \rrbracket^{g/x}(x)(i)]$
- (50)  $\llbracket [VP[\text{believes Ortcutt}] [\lambda z \lambda i' [\text{a spy } i'] i' \lambda m t_z \text{ is } m]] \rrbracket^g(x)(i) =$   
 $\llbracket \text{believe} \rrbracket^g(\text{Ortcutt})(\lambda z \lambda i' \exists m [\text{spy}(m)(i') \wedge m \text{ is } z \text{ in } i'])(x)(i) =$   
 $(\lambda att \lambda i. 1 \text{ iff. } \exists D [D(i[\text{AUTH}(i)/att]) = \text{Ortcutt} \wedge \text{Dis suitable} \wedge \forall i' DOX_{att} i [(\lambda z \lambda i' \exists m [\text{spy}(m)(i') \wedge$   
 $m \text{ is } z \text{ in } i'])(D(i'))(i')=1]]) (x)(i), \text{ or}$   
 $(\lambda att \lambda i. 1 \text{ iff. } \exists D [D(i[\text{AUTH}(i)/att]) = \text{Ortcutt} \wedge \text{Dis suitable} \wedge \forall i' DOX_{att} i [\exists m [\text{spy}(m)(i') \wedge$   
 $m \text{ is } D(i') \text{ in } i']]) (x)(i), \text{ or}$   
 $1 \text{ iff. } \exists D [D(i[\text{AUTH}(i)/x]) = \text{Ortcutt} \wedge \text{Dis suitable} \wedge \forall i' DOX_x i [\exists m [\text{spy}(m)(i') \wedge m \text{ is}$   
 $D(i') \text{ in } i']]).$
- (51)  $[(49)](50) = \lambda i 1$  iff.  $\forall x [x \in g(2) \Rightarrow \exists D [D(i[\text{AUTH}(i)/x]) = \text{Ortcutt} \wedge \text{Dis suitable} \wedge \forall i' DOX_x i [\exists m [\text{spy}(m)(i') \wedge m \text{ is } D(i') \text{ in } i']]]$

Thus, the universal quantifier, scoping above the existential description introduced by *believe* allows us to capture why Ralph, Alph, and Dalph may have different descriptions for Ortcutt, and thus different *de dicto* beliefs.

The above example might thus suggest that the existential description is the more desirable. However, we might instead take the quantificational attitude-holder puzzle to indicate that we chose the wrong object to be supplied by context: instead of a concept, we need a function from individuals to concepts:  $D_i(x)(i) = f_x(i)$ , where  $f_x$  is a suitable concept.<sup>14</sup> If  $D_i$  is evaluated at the attitude-holder and the attitude-holder is quantified over, then we will arrive at potentially different concepts for each attitude holder. Here is the revised definition:

- (52)  $\llbracket \text{believe} \rrbracket^g = \lambda res_e \lambda P_{\kappa t} \lambda att_e \lambda i_{\kappa} : g(j)(\mathbf{att})(i[\text{AUTH}(i)/att]) = res$  and  $g(j)(\mathbf{att})$  is suitable.  
 $1 \text{ iff. } \forall i' DOX_{att} i [P(g(j)(\mathbf{att})(i'))(i') = 1].$

This procedure is simply the application of the procedure of Skolemization extensively used in Proof Theory. In second-order logic, the following equivalence holds

$$\forall x \exists y R(x, y) \Leftrightarrow \exists f \forall x R(x, f(x)).$$

Thus, one may safely replace existentials in the scope of a universal by a Skolem function over the the variable quantified over by the universal.<sup>15</sup> This is what I have done above. By the equivalence, it will derive the facts that the existential also derives.

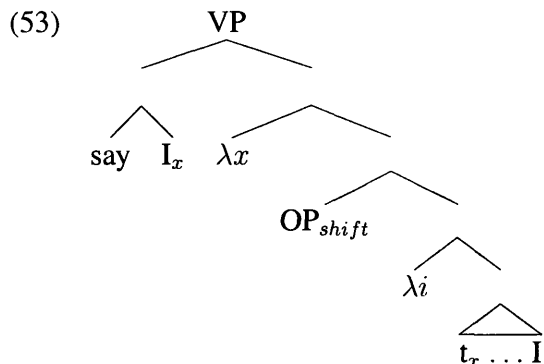
## Eliminating Movement

Before continuing, I would like to offer a re-characterization of the previous proposals in a way that does not involve movement of the *res* to a position outside of the intensional domain. My reasons for doing this are two-fold. First, I will argue in section (1.4.3) that a *de re* term contributes its *res* value when assessing certain binding-theoretic issues within the intensional domain. Second, in

<sup>14</sup>Irene Heim (p.c.) suggested this approach.

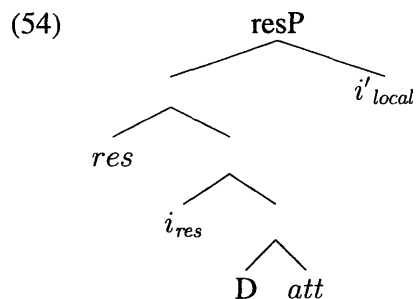
<sup>15</sup>See Kratzer (1998); Winter (1997); Chierchia (2001) for a discussion regarding Skolemization of choice-functional indefinites.

Chapter 2, I will present cases of indexical shift, whereby (in certain languages) sentences of the form *John said I am sick* are ambiguous in the reference of *I*, either to the speaker or to John’s *de se* counterparts. Note that unshifted indexicals in attitude contexts are interpreted *de re*. I will show that such shifting is constrained like direct discourse: *John said I love my mother.* is not four-ways ambiguous; both indexicals must “shift together.” I will argue that this is a result of a shifting operator that occurs in the intensional domain; but if *de re* interpretation involved movement out of this domain, “shift together” would not be derived. Here is the puzzle:



The *res*-moved *I* is outside the shifting domain, and hence (by the theory in Chapter 2) should refer to the utterance speaker, while the lower one refers to the attitude-holder. Perhaps the constraint is that there is no *res* movement when a shifting operator is present. However, other items can be interpreted *de re*, just not the shifted indexicals. This is the puzzle that emerges if we adopt a movement approach to *de re* ascription. While it would also be independently salutary to remove the complex machinery of *res* movement from the grammar, I do not think the approaches I will explore are any less stipulative.

First, let me consider the Skolemized contextually supplied description. Recall that the description needs to access two elements to test its conditions. First, the attitude holder *att* (i.e., the Skolem variable). Second, the index  $i_{res}$  of the matrix (in order to fix what predicate it is being interpreted *de re* with respect to). Finally, it must test its value in  $i_{res}$  with respect to the *res*. All of this should return a concept which is evaluated in the local index  $i'_{local}$ . Thus, four arguments in all to yield something of type *e*. Thus, the structure I will pursue is the following:



Given this, the denotation of *D* is as follows:

(55)  $[D]^g = \lambda att_e \lambda i_{\kappa} \lambda res_e \lambda i'_{\kappa} : D(att)(i[AUTH(i)/att]) = res$  and *D* is suitable.  $D(att)(i')$ .

This is precisely the conditions above, except now the presupposition has been incorporated into the denotation of the description itself. In order for this to work out to the correct meaning, however, I will have to stipulate the following condition on these forms:

- (56) Wellformedness: The structure above is well-formed only if there is an attitude verb  $V_a$  such that  $att$  is its attitude-holder, and it is evaluated in index  $i_{res}$ .

The worry is the following. *Res* movement simultaneously accomplishes two things. First, it moves the *res* to the correct intensional scope to receive its value (we have been dealing with proper names, for which these issues are obscure, but consider a definite description).<sup>16</sup> Second, it allows one to state the relevant restrictions on *de re* ascription inside the attitude verb itself. Thus, it is licit to make reference to the index the attitude is evaluated with respect to as well as the attitude holder; all of these are arguments of the attitude verb. The complex structure above aims to recreate this, and so it must do it *correctly*, lest there be havoc. Admittedly, this is somewhat like having your cake and eating it too, but it will suffice.<sup>17</sup> Given this, there are no conditions in the attitude verb itself regarding *de re* ascription. The denotation is thus the propositional one considered at the outset (modulo a higher-order intensional type):

- (57)  $[[\text{believe}]^g = \lambda p_{\kappa t} \lambda att_e \lambda i_{\kappa} \forall i' DOX_{att} i [p(i') = 1]]$ .

What about the existential story? The *in situ* contextual story had the *res* present as an argument by assumption; what it needed was the derived index parameters. In this case we have the inverse problem: the derived index can be formed based on the arguments of the verb, but the *res* is no longer an argument. However, we can re-characterize the problem as follows: we are looking for an functor  $G$  such that, for *any* argument  $r$ , is guaranteed to return a concept  $f$  such that  $f(i_{derived}) = r$ . That is, regardless of what the *res* is, it will always return a concept that will evaluate to the *res* in the derived index. Following Anand (2002), and Percus and Sauerland (2003a), I propose that these are the kinds of functors that we are existentially quantifying over. These “concept generators,” to adopt a term from Percus and Sauerland (2003a), must have the following conditions:

- (58)  $\forall x \in D_e, \forall i \in \kappa,$   
 $\Gamma \in D_{\langle e, \kappa \rangle, ese}$  is in  $CG$  iff.
- a.  $dom(\Gamma(x)(i)) = \{y: x \text{ is acquainted with } y\}$  acquaintance condition
  - b.  $\forall y \in dom(\Gamma(x)(i))$   
 $\Gamma(x)(i)(y)$  is a concept  $f$  such that:
    - i.  $f$  is suitable for  $x$  in  $i$ , and suitability condition
    - ii.  $f(i[AUTH(i)/x]) = y$ . res condition

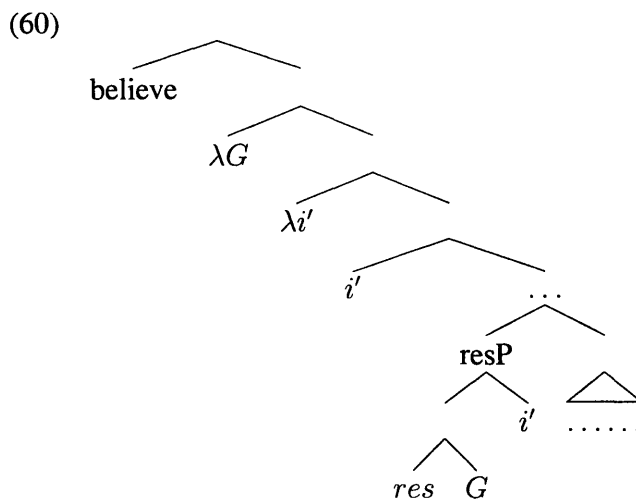
<sup>16</sup>Thus in the above, the *res* would be a concept plus an index variable were it a definite. In this case, a further wellformedness condition would have to stipulate that the index for the *res* matched  $i_{res}$ . Given that, it might be simpler to treat the *res* as a concept and  $D$  as specifying  $D(att)(i[AUTH(i)/att]) = res(i)$ . In what follows, I will suppress this concern for reasons of simplicity.

<sup>17</sup>If the derived index  $i[AUTH(i)/att]$  were somehow syntactically accessible, then we would not need the Wellformedness requirement at all. All relevant parameters would be readable from the derived index directly. I am unclear how to do this, however.

Let me walk through these conditions. The last two, the suitability and *res* conditions are the familiar ones, only they now apply to all the possible elements in the domain, since it is unknown what particular *res* is being interpreted *de re*. But the domain must be concomitantly specified, since it is impossible for there to be a suitable *f* relating *x* to something he is not acquainted with. *G* we may think of as an individual's perspective on people in the world he is acquainted with; in the terms of Aloni (2000), it is a conceptual cover of the space of the people *x* is acquainted with.<sup>18</sup>  $\Gamma$  is the generalized form of *G*, taking the attitude holder and the index of evaluation as arguments. This suffices to generate *de re* ascription without movement. Here is the revised definition of *believe*:

$$(59) \quad [\text{believe}]^g = \lambda P_{\langle ese \rangle, \kappa t} \lambda att_e \lambda i_\kappa. 1 \text{ iff. } \exists \Gamma \in CG[\forall i' DOX_{att i}[P(\Gamma(x)(i))(i') = 1]].$$

So now, the objects of belief *de re* are not propositions, of type  $\langle \kappa t \rangle$ , but functions from *G*s to propositions. The structure that is necessitated is the following:



$[resG]$  will return a concept that, by definition of  $\Gamma$  will be both suitable and return the *res* in the derived index. This is all that is desired.

Note that both of these methods extend to indefinitely many *de re* interpreted terms. By definition, any concept generator  $\Gamma$  will yield a *G* that encodes concepts for each *z* that *att* is acquainted with, we may apply *G* to any such *res*. Similarly, the contextual approach can build up  $resP$ 's where ever desired. Note, however, one crucial difference between the two systems: in the movementless existential approach, the concept *f* is a function of the *res*, and hence this system may only capture ascriptions where the subject conceives of the *res* in a consistent fashion. The contextually supplied Skolemized concepts, however, may be anything suitable. In particular, they immediately capture examples such as the following:

(61) Ralph sees Ortcutt on the beach, and takes him for some upstanding citizen. He sees Ortcutt in disguise at the assassin's guild, and somehow comes to the belief that the assassin was hired to kill the man on the beach. Ralph thought that Ortcutt<sub>1</sub> was an assassin hired to kill himself.<sup>19</sup>

<sup>18</sup>A better term might be a conceptual bijection, since we require uniqueness in both directions.



For the movementless existential approach, it will be necessary to add an additional  $\Gamma$  expressing an additional point-of-view of Ralph's. This will in turn force attitude verbs to be of type  $\langle \textit{ese}, \textit{esekt} \rangle$ . I will not develop this here.

While clunky, note that this is no different than what is necessary for any multiple-element *de re* attitude ascription in a *res*-movement approach.

Finally, let me return to the puzzle of obligatory *de se* expressions. Can we capture them in this system without a special LF? For the contextual approach, all that is required is some mechanism by which PRO dictates the description's value. Here is one possible way: suppose the *res* and *att* arguments swap places. Now suppose that the structure  $[x_i D_{SELF}]$  is lexicalized as PRO (where  $D_{SELF}$  is the  $D$  such that  $\forall x D(x) = \text{AUTH}$ . In some sense, this is a particular LF, but it is restricted to a lexical idiosyncrasy; note, at least, that it does not look as different as the binding LF Chierchia proposes. The movementless existential approach cannot appeal to this since  $G$  is quantified over, but perhaps it can use the following  $\llbracket PRO_i \rrbracket^g = \lambda G_{ese} : G(g(i)) = \text{AUTH}.g(i)$ . That is, PRO is treated as a variable which introduces the presupposition that its concept generator sister sends it to  $f_{self}$ . Again, this will work, and without a dedicated *de se* LF, but it does seem somewhat stipulative (consider, for instance, the case of *de nunc* or *de te* if this is not clear). However, the conclusion is that we *can* derive obligatory *de se* without binding in the LF by a lambda abstractor.

### 1.3 The Argument From Only

In the previous section I briefly presented the argument for *de se* LFs arising from the obligatoriness of *de se* interpretations. However, given that *de se* ascription is a sub-instance of *de re* ascription under a specific description, I concluded that either a distinct *de se* logical form or a specified *de se* acquaintance relation for particular pro-forms would both be able to express obligatory *de se* ascription.

In following two sections I would like to consider two arguments due to Orin Percus and Uli Sauerland that suggest that there are, indeed, dedicated *de se* LFs for elements outside of PRO. The first argument comes from the consideration of sentences with quantificational subjects such as *Only John said that his pants were on fire.*, where it is observed that a strictly *de se* reading is allowed (more on this in a moment), in contrast to what we just observed with other quantificational subjects. Let me call this the Argument from Only. The second argument comes from an asymmetry in the reference of the two counterparts of dream-report sentences, such as the famous example from Lakoff (1972):

(62) I dreamed I was Brigitte Bardot and I kissed me. (Lakoff, 1972)

As (Percus and Sauerland, 2003b) observe, the reference of the indexicals in the second conjunct are fixed: the subject must be Lakoff's dream-self (Brigitte Bardot), while the object must be Lakoff's bodily counterpart in the dream. That is, the sentence can only report a dream where, were we to be watching it on a viewscreen, Bardot kisses Lakoff. Now, note that the dream-self

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<sup>19</sup>The apparently exceptional binding of the reflexive is reminiscent of the puzzle discussed in Heim (1994) regarding dream report sentences.

is nothing more than the *de se* self of the dream; similarly, the bodily counterpart is a *de re* interpreted pronoun (where the description presumably references some salient properties of Lakoff's appearance). Percus & Sauerland dub the prohibition above the "Oneiric Reference Constraint," which for now I will characterize as follows:

- (63) ONEIRIC REFERENCE CONSTRAINT (to be discussed)  
A *de se* pronoun cannot be c-commanded by a *de re* pronoun.

I will return to the ORC in the following section. For now, let me simply say that I find it extremely convincing.<sup>20</sup> The Argument from Only, however, I am more dubious of. Specifically, as I will show in this section, it arises even when put into direct conflict with the ORC, which, as far as I understand Percus & Sauerland, should block the putative *de se* readings. I will conclude that what the Argument from Only teaches us is that there is something special about the *SELF* relation *qua de re* belief ascription, namely that it can never be taken off the table. In the process of treating this argument, I will show that the Skolemized theory of *de re* presented above cannot deal with the facts and will suggest that it should be abandoned in favor of the quantificational theory.

### 1.3.1 The Argument from Only

Recall that I concluded on the basis of *de re* beliefs with quantificational attitude-holders that the two viable options for *de re* ascription involved existential quantification over descriptions and Skolemization of the description. Percus and Sauerland (2003a) observe that in many cases, the existential approach is too strong. As mentioned above, their example involves *only*. To warm up, let us consider a simpler case with *no DP*:

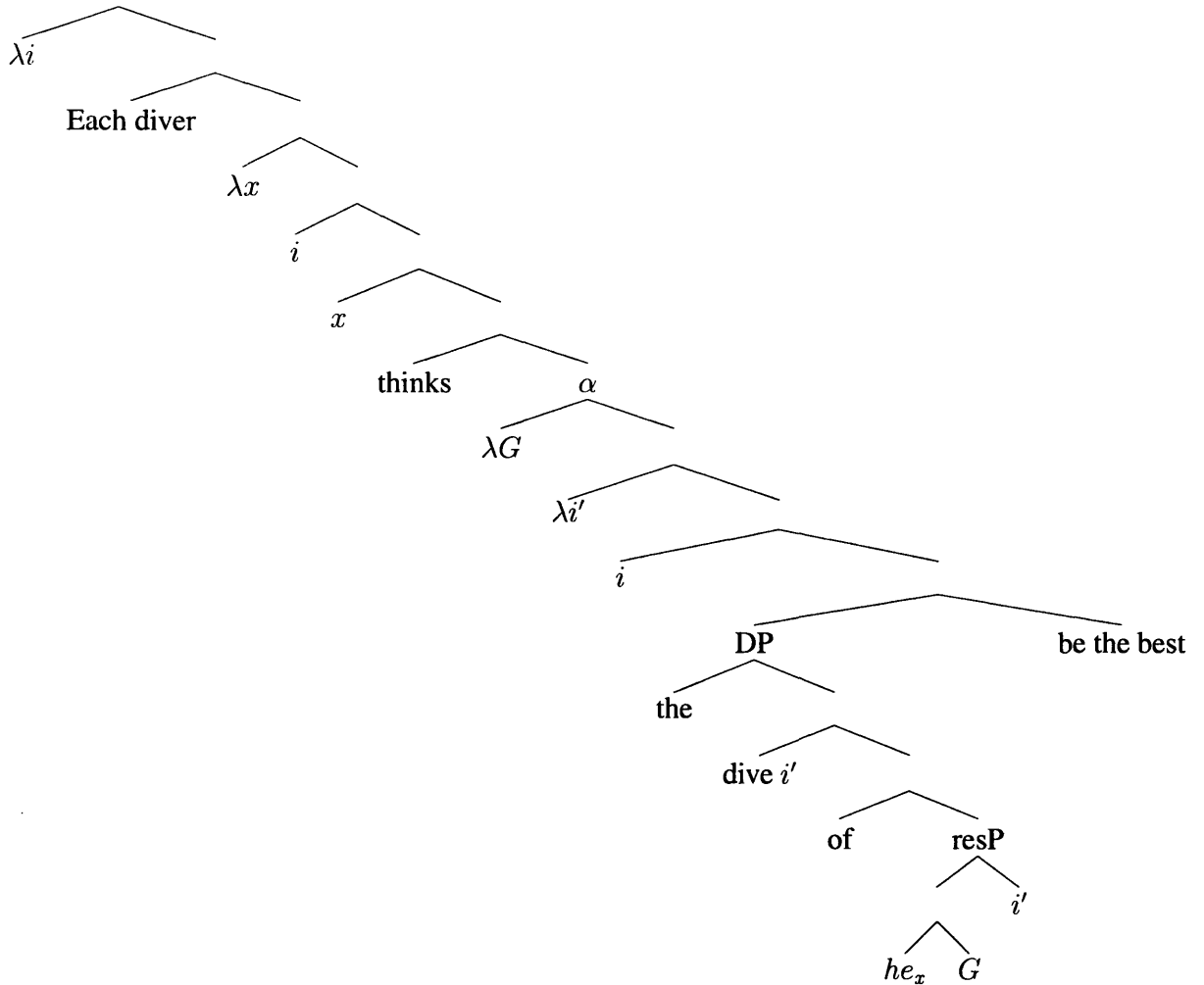
- (64) [Diving Scenario]. John, Bill, and Sam are the divers. While none of them recognize themselves in the film, each of them happens to think that his dive was the best.
- a. [Each diver]<sub>*i*</sub> thinks that his<sub>*i*</sub> dive was the best.
  - b. [No diver]<sub>*i*</sub> thinks that his<sub>*i*</sub> dive was the best.

The puzzle that will emerge is that in this scenario both (64a) and (64b) are good. We have already considered examples like (64a) above. Under the existential approach, this is the result of the following LF:

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<sup>20</sup>Note that judgments on this data are extremely difficult for many people. In fact, I am aware of at least 10 people who do not obey any form of the ORC. This, I will argue at the end of this Chapter and in consideration of long-distance anaphora in Chapter 3, is quite acceptable, given that it is roundly violated in many languages. I will be concerned with the set of speakers for whom there is a contrast. More on this in the following section.

(65)



And the truth conditions of this work out as follows:

- (66)  $\forall x[\text{diver}(x)(i) = 1 \Rightarrow P(x)(i) = 1]$ , where  
 $P(x)(i) = \exists \Gamma \in CG[\forall i' \in DOX_{x,i}[\text{the dive of } [\Gamma(x)(i)](x)(i') \text{ in } i' \text{ is the best in } i']]$

The existential introduced by *de re* interpretation may thus range over the various descriptions John, Bill, and Sam have of themselves (say,  $[\lambda i. \text{diver number } n \text{ in } i]$ ), and insure that (64a) is in fact true in the above scenario. So far so good. But now consider (64b), which given the semantics so far has truth-conditions:

- (67)  $\forall x[\text{diver}(x)(i) = 1 \Rightarrow P(x)(i) = 0]$ , where  
 $P(x)(i) = \exists \Gamma \in CG[\forall i' \in DOX_{x,i}[\text{the dive of } [\Gamma(x)(i)](x)(i') \text{ in } i' \text{ is the best in } i']]$

This says that John has no *de re* belief of himself diving the best, nor does Bill, nor does Sam. Thus, in the scenario above, (64b) should be false, contrary to fact. Why *is* (64b) good? Crucially, it is because none of the boys have *de se* beliefs about their dives. Thus, when we change the example such that one boy has a *de se* belief, the sentence is false:

- (68) [Diving Scenario]. John, Bill, and Sam are the divers. While neither Bill nor Sam recognizes himself in the film, each of them happens to think that his dive was the best. John, who does recognize himself, thinks “My dive was the best.”
- a. Each diver  $i$  thinks that his $_i$  dive was the best.
  - b. # [No diver] $_i$  thinks that his $_i$  dive was the best.

Let me expand on this point a bit more. One might conclude on the basis of the grammaticality of (64b) (given a Kaplanian view of *de re*) that what is at work here is simply a case of scopal ambiguity, where the existential takes wide scope at LF. But such a move is insufficiently weak, since it predicts that wide-scoped existentials should universally be available. Thus, consider a quantified Orcutt sentence:

- (69) [Ralph-Orcutt Scenario] Ralph, John, and Bill all see Orcutt in the same locales, and all come to the dual belief that Orcutt is a spy and that he’s not a spy.
- a. Each man  $i$  thinks that Orcutt is a spy.
  - b. # [No man] $_i$  thinks that Orcutt is a spy.

If the existential were wide-scoped, (69b) should be felicitous in the context above, since there is in fact a suitable concept available – [ $\lambda i$ . the person AUTH( $i$ ) saw in the alley in WORLD( $i$ ) at TIME( $i$ )]. But the sentence is false here.<sup>21</sup> This, in essence, is P&S’s Argument from Only, which here is an argument from negative quantifiers. The difference between (64b) and (69b) lies in the particular invocation of *de se* belief. If we pursued the wide-scoping story, we would thus have to limit the wide-scoped behavior to the SELF relation alone.<sup>22</sup>

The original puzzle from (64b) is not a problem for the contextual accounts, since we simply need supply a contextually salient Skolem function (i.e.,  $D_{SELF}$ ). But note that the objection to wide-scoping applies equally well to these approaches. This is because it is possible to assign concepts to each of the boys in (69b) and (68b) that would make the sentence true. I take this as evidence against the Skolemized theory, since, importantly, the relevant concepts are perfectly usable to describe unquantified belief reports.

The above point is, I think, more clearly observable if we follow Percus and Sauerland (2003a) and stick to *only*. Here is their example:

- (70)  $S_2$ : A group of drunken election candidates watching campaign speeches on television do not recognize themselves in the broadcast. John, the only confident one, thinks “I’ll win,” but does not recognize himself in the broadcast. Bill and Sam, both depressive, think “I’ll lose” but are impressed by the speeches that happen to be their own and are sure “that candidate” will win. Peter, also depressive, happens to be impressed not by his own speech but by John’s. (Percus and Sauerland, 2003a)

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<sup>21</sup>Note that the *de dicto* *None of the boys thinks that the man who he saw in the alley is a spy.* is acceptable; the point is that substitution of identicals does not preserve truth-value.

<sup>22</sup>I think this might be a viable option, and it strikes me as no more stipulative than the route I will take. Here’s the sketch of a proposal: assume that the *de re* element is a concept variable that can be bound by a Skolemized choice function. Assume that a matrix level binder has a domain restricted to SELF. I will leave comparison of this option to future research.

[Only John] thinks that he'll win the election. [ $\checkmark$ S<sub>2</sub>])

As noted, this example is felicitous in the context above. Assume that the speeches come in the order John, Bill, Sam, Peter. Percus & Sauerland's scenario yield the following *de re* concepts for each individual (I exclude Sam because he is equivalent to Bill for the purposes of this scenario):

- (71) a. John:  $f_1 = \lambda x \lambda i'. x = \text{AUTH}(i')$ .  
b. Bill:  $f_2 = \lambda x \lambda i'. \text{the 2nd candidate } x \text{ saw in WORLD}(i') \text{ at TIME}(i')$ .  
c. Peter:  $f_3 = \lambda x \lambda i'. \text{the 4th candidate } x \text{ saw in WORLD}(i') \text{ at TIME}(i')$ .

Let us first exclude the reading where he is co-referent with John, which might confound the experiment. This is Peter's job in the scenario, since  $f_3(\text{Peter}, i) = f_1(\text{John}, i)$ , where  $i$  is the matrix index (i.e., the one in which *believe* is evaluated). Thus, John is not the only person who believes that John (*de re*) will win the election; Peter does as well. So this cannot be the source of the felicity of the example.

But now we are at exactly the same pass as when we considered the negative quantifier cases above. Both John and Bill have a suitable *de re* concept such that *John<sub>i</sub> thinks he<sub>i</sub> will win the election.* and *Bill<sub>i</sub> thinks he<sub>i</sub> will win the election.* But then how can (70) be felicitous, given an existential treatment of *de re* concepts? Note for the contextual account that these *de re* concepts are suitable enough to allow one to say *Only Bill thinks he will win the election*, contrary to fact.

Percus & Sauerland conclude that this example is felicitous because there is a distinct *de se* LF, along the lines of Chierchia, which can be schematized as follows:

- (72)  $\lambda i [\text{Only John}_m] i \lambda j \text{ thinks } \lambda k \lambda i' i' \text{ he}_k \text{ will win the [election } i']$ .

Given a property analysis for *think* like that for *want* in (20), this will correctly derive that (70) is acceptable in this scenario, since only John does indeed have the relevant *de se* belief. Thus, Percus & Sauerland conclude that there are in fact *de se* LFs along the lines that Chierchia proposed.

Again, recall that we have shown that it is possible to derive obligatory *de se* in the absence of LF binding via the mechanism of *de re* ascription (suitably monkeyed). Perhaps that is what we could be learning from these examples: that there are overt PRO forms spelled out as ordinary pronouns. Indeed, there is evidence that this might be going on, given the fact in the following section: these effects appear even when one controls for P&S's *de se* LF.

### 1.3.2 The problem: available with ORC violations

How can we control for it? Recall that I mentioned Percus & Sauerland's Oneiric Reference Constraint at the outset of this section:

- (73) ONEIRIC REFERENCE CONSTRAINT (to be discussed)  
A *de se* pronoun cannot be c-commanded by a *de re* pronoun.

As they observe, this constraint is apparently what determines the unambiguity of reference in Lakoff's dream sentence:

(74) I dreamed I was Brigitte Bardot and I kissed me. (Lakoff, 1972)

In the spirit of Chierchia's LF, I will adopt indexing on the verb to indicate *de se* ascription. Thus the readings are:

(75)  $I_i$  dreamed $_j$   $I_j$  was Brigitte Bardot and  $I_j$  kissed me $_i$ . Bardot kisses Lakoff

(76) \*  $I_i$  dreamed $_j$   $I_j$  was Brigitte Bardot and  $I_i$  kissed me $_j$ . Lakoff kisses Bardot

Now, it should be noted that the ORC is routinely violated for attitude verbs (except *dream* and *imagine*). Consider the following amnesiac example:

(77) John Forsythe, a famous Picasso scholar, has recently taken up Picasso forgery as a way of supporting his extravagant lifestyle. One night while signing a forgery, John slips, falls, and knocks himself unconscious. He wakes up hours later, with no knowledge of who he is. On the easel is a painting with signature brush and the signature half-written. John concludes that he must indeed be Picasso – who else would be signing Picasso's name? Investigating further, John comes across a biography of the noted Picasso scholar John Forsythe (a gift copy from the author), unfortunately with no pictures. John peruses the book, discovers that Picasso is a famous artist and that Forsythe is a Picasso scholar. The book also claims (erroneously, in fact) that Forsythe owns five of Picasso's masterworks. John thus comes to the belief, "This man Forsythe owns five of my paintings."

$John_i$  believed $_j$  that he $_j$  was Pablo Picasso and that he $_i$  owned five of his $_j$  paintings.

This sentence is felicitous in the context, with the intended interpretation glossed. And yet, the second attitude complement contains a *de re* pronoun c-commanding a *de se* pronoun. A similar example can be formed for bouletics:<sup>23</sup>

(78) John comes late one night, drunk and without his keys. Undeterred, he smashes through a back window and goes up to bed. By the morning, he has forgotten the whole incident, and is shocked to see the back window broken into pieces. Fearing that he is being robbed, he runs upstairs to check his safe.

$John_i$  hoped $_j$  that he $_i$  hadn't yet found his $_j$  safe.

Percus & Sauerland can explain these facts, given that they still allow *de re* readings under SELF for most attitude verbs. This itself might support their dual-use method – when there are both options, the ORC disappears.<sup>24</sup> However, this makes an interesting prediction: when the ORC is violated, it should not be possible to get the strictly-*de se* reading that licensed *Only John thinks he'll win the election*, precisely because such an interpretation is provided by a dedicated *de se*

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<sup>23</sup>A worry in these examples might be that these are *de dicto* E-type pronouns; note however that there is no linguistic antecedent in the scenario below for he:

(iii) [???]I thought I was being robbed and that he was cracking my safe open.

<sup>24</sup>Why is this not possible for *dream* as well? First, it should be noted that for some people it *is* possible. This suggests to me that it is not something about *dream per se* that is triggering this. I will return to this problem in section (1.3.4).

LF which is subject to the ORC. In point of fact, I think this prediction is false. We can introduce ORC violating structures and still produce strictly-*de se* readings. Here's the setup, building on the drunken candidates scenario P&S employ:

- (79) **S:** [Drunken candidates scenario] Important modification: The candidates are on an MTV-style reality show, where their every move during the election year is taped. This means that the night they were watching themselves give campaign speeches (say, June 9th) has been taped as well. Suppose that the episode from June 9th is aired on June 13th. As is their usual habit, the candidates are both (a) watching themselves (in this case, watching themselves), and (b) too drunk to even recognize themselves watching the candidate speeches.

John, watching at home, is very impressed with his own speech, and says, "That politician [John] has my vote!" Bill, watching himself watching the speeches, sees himself clapping at his own speech, but not recognizing himself at all, says, "That politician [Bill] has that guy's [i.e., Bill's] vote, but he doesn't have mine!" Peter is impressed by John's speech, and says, "That politician [John] has my vote!" He also observes that John in the reality show is clapping for John the candidate, and says, "He [John] also has his [John's] vote!"

Summarizing the relevant statements:

John<sub>j</sub> said<sub>k</sub> that he<sub>j</sub> was his<sub>k</sub> favorite candidate.

Peter<sub>p</sub> said<sub>k</sub> that he<sub>j</sub> was his<sub>k</sub> favorite candidate.

Peter<sub>p</sub> said<sub>k</sub> that he<sub>j</sub> was his<sub>j</sub> favorite candidate.

Bill<sub>b</sub> said<sub>k</sub> that he<sub>b</sub> was his<sub>b</sub> favorite candidate.

Therefore: John is the only  $x$  who says, " $x$  has my vote!"

Control #1: John is not the only  $x$  who says, "John has my vote!" (Peter does too.)

Control #2: John is not the only  $x$  who says that John has John's vote. (Peter does too.)

[Only John<sub>i</sub>]<sub>j</sub> said<sub>k</sub> that he<sub>j</sub> was his<sub>k</sub> favorite candidate. [✓S]

As indicated, the sentence is good in the above scenario. At the risk of endless repetition, let me make clear what has gone here: I first constructed a double-sight situation so that I could generate the relevant ORC violating speech ascriptions. As discussed above, these are perfectly possible in P&S's system: we are simply asserting for John and Bill that there are two concepts under which each speaker sees himself; for John one happens to be *de se*. However, with a quantified subject, the same weak truth conditions should arise: we should be able to use the target sentence only to describe scenarios where only John is talking about himself under two suitable concepts. The scenario above does not fit this bill; Bill also is talking about himself under two suitable concepts (the two different images of himself: one speaking, the other drunkenly clapping). Thus the sentence should be false in this scenario. But it is not. This suggests, I think, that the dedicated *de se* LF for dream reports is not what is going on in the initial puzzle cases that motivated P&S's claim.<sup>25</sup>

<sup>25</sup>Note that this argument only goes through to the extent that one posits only one dedicated *de se* LF, which is always subject to the ORC (this is, in fact, what P&S themselves assert). Another possible conclusion is that there are two such LFs, or that dream reports are subject to the ORC but not other attitude ascriptions. Indeed, based upon the explanation for the ORC I will offer in the following section, the culprit is the presence of syntactic binding. If one postulated *de se* LFs without binding, it would predict no ORC effect. Based on the index-based system presented at the close of this chapter (and exploited in Chapter 2), one might argue that *de se* can arise by simply referencing the AUTH coordinate of the relevant index: [DESE-he<sub>n</sub>]<sup>g,I=AUTH(I[n])</sup>. As I will touch on in the Conclusion, we might need such elements in general to handle the full panoply of *de se* expressions, including the antecedent for impersonal

### 1.3.3 Putting the blame on the quantifier

What then is going on? The problem is that existential quantification is simply too weak in the expressly *de se* case. Perhaps, then, it was a mistake to assume existential quantification in the first place; if we simply went back to the Lewis-Heim system, in which the *de re* concept is provided by context, perhaps we would be better off. But then how to analyze the initial problem for such proposals – the possibility of quantified *de re* relations. In this section, I'd like to briefly an elegant DRT attempt by Maier (2005) to handle such cases without resorting to quantification in general. Maier's basic idea is that it is the quantified subject which serves to introduce quantification over concepts, and that in general the concept is provided by the discourse context.

Maier begins from a Lewis-style theory of *de re*, where attitude predicates predicate a relation R between the center of the belief world and an individual:

$$(80) \quad \text{believe}(x): \frac{u, v}{\text{center}(u), R(u, v), P(v)} \quad \text{believe's DRS}$$

Here P stands from the embedded property. So far, nothing different from what I assumed above. But where does R come from? Maier assumes that it is presupposed in the DRS where believe is introduced:<sup>26</sup>

$$(81) \quad \text{believe}(x): \frac{\partial[R|R(z,w)]}{\frac{u, v}{\text{center}(u), R(u, v), P(v)}} \quad \text{R presupposed}$$

In the most basic cases, R will be bound by a salient relation in context, following the binding-theoretic treatment of presupposition (van der Sandt, 1992). Let me consider, concretely, the Kaplanian posterchild *John<sub>i</sub> thinks his<sub>i</sub> pants are on fire.*, which is a *de re* belief. This has the following preliminary DRS:

$$(82) \quad \text{believe}(w): \frac{\partial[w | \text{John}(w)], \partial[R|R(w,z)]}{\frac{u, v}{\text{center}(u), R(u, v), \text{pants-on-fire}(v)}} \quad \text{initial rep.: R presupposed}$$

The scenario context provides the following:

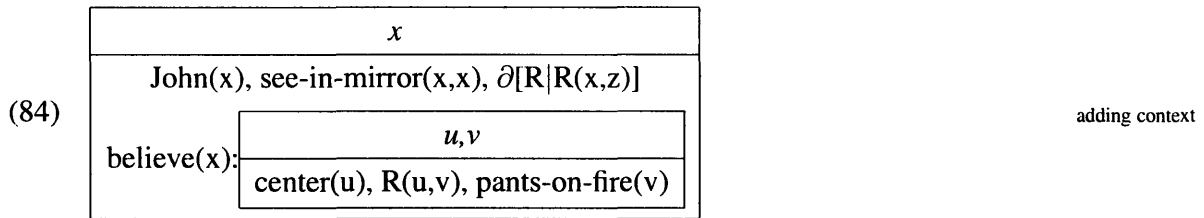
$$(83) \quad \frac{x}{\text{John}(x), \text{see-in-mirror}(x, x)} \quad \text{context}$$

pronouns, generic *one*, the epistemic subject of epistemic modals, and the judge of predicates of personal taste. I will leave working this out for future research.

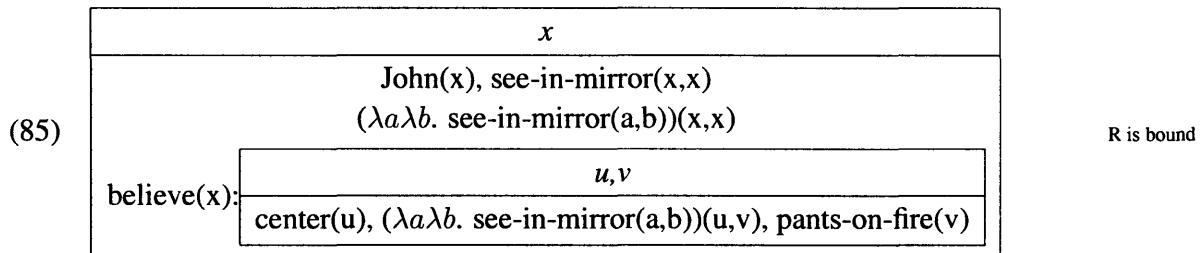
<sup>26</sup>In what follows I suppress the higher order unification procedure that Maier employs to derive R from a contextually-salient relation; essentially, one takes a saturated relation  $P(x,y)$  and finds a relation  $\lambda a \lambda b. L(a,b)$  which can produce  $P(x,y)$  after a finite number of function applications and bound variable renamings. See Maier (2005) for complete details.



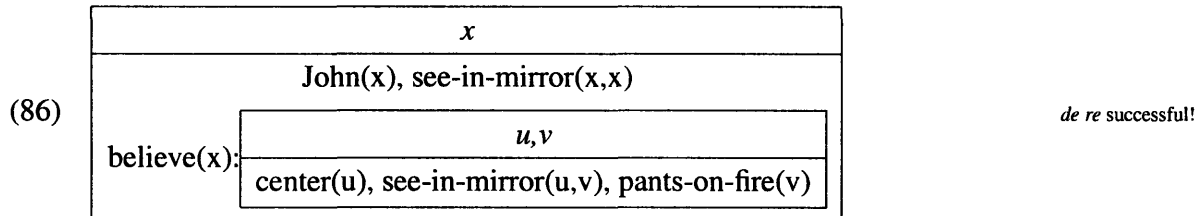
Combining these yields:



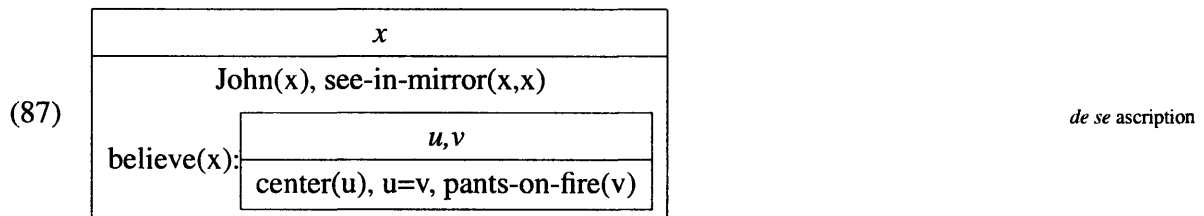
Now  $z$  is bound, as is  $R$  to the contextually-salient  $(\lambda a \lambda b. \text{see-in-mirror}(a,b))$ :



This simplifies as below, producing precise the *de re* reading we were looking for:

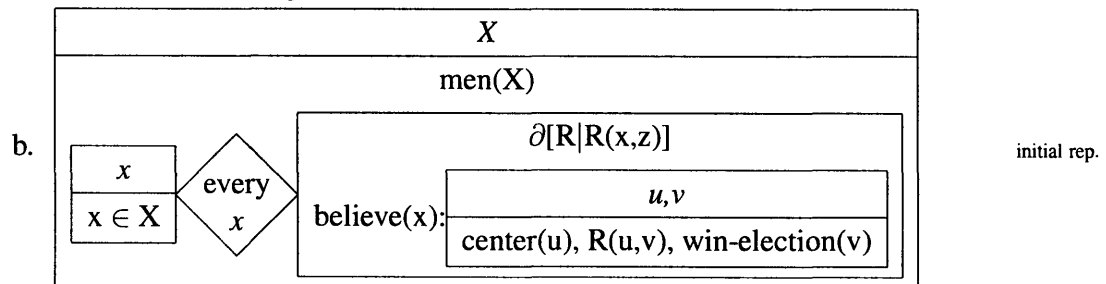


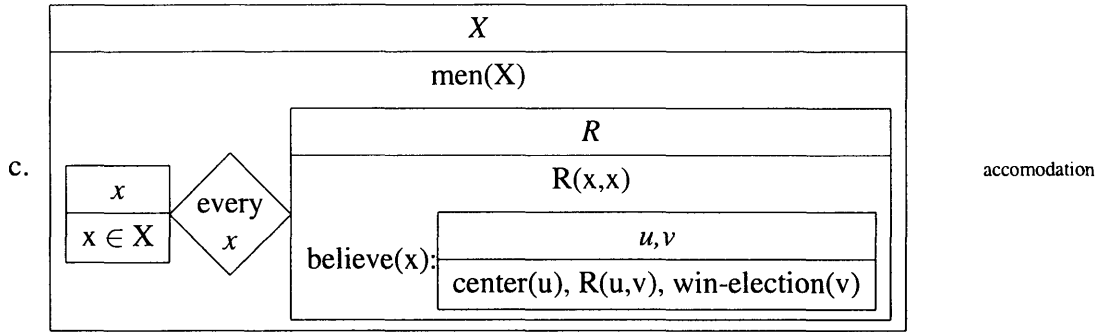
Maier assumes that there is always a special relation available for free, identity:  $[\lambda a \lambda b. a = b]$ . This corresponds to SELF, and will produce *de se* ascription:



Maier handles the puzzling cases of quantification as cases of local accommodation (in the case that binding by a contextually-salient relation yields falsity):

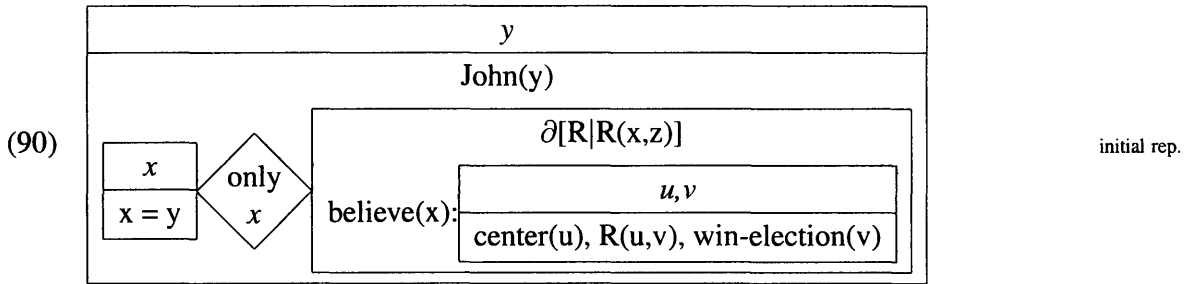
(88) a. Everyone<sub>*i*</sub> believes<sub>*j*</sub> he<sub>*i*</sub>'ll win the election.



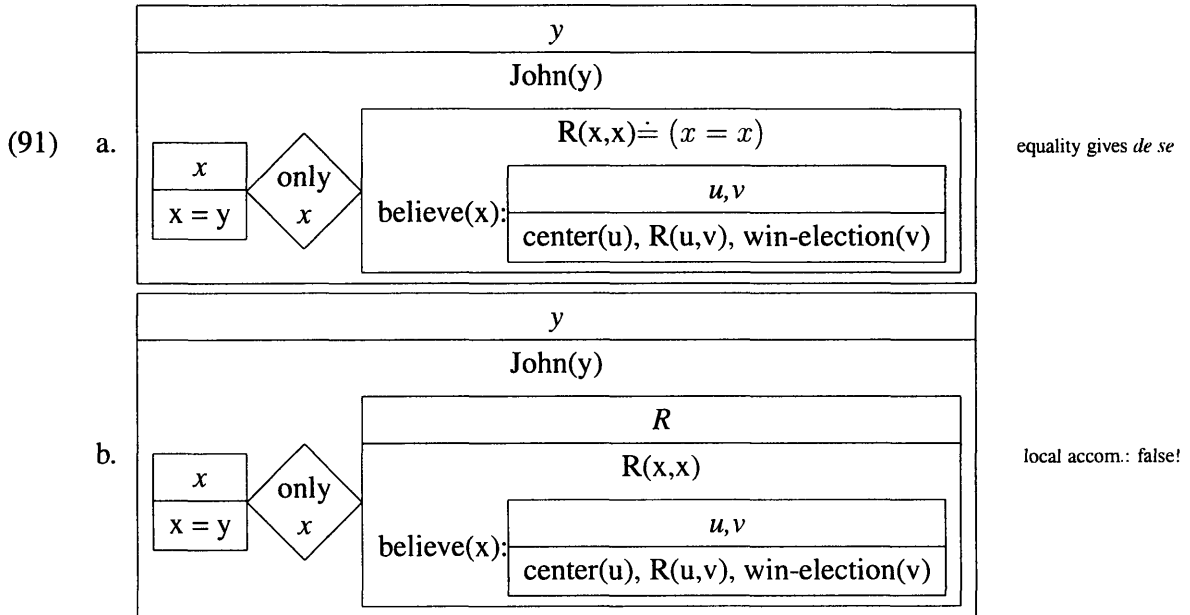


The same is true for quantificational *only*.

(89) [Only John<sub>i</sub>]<sub>k</sub> believes<sub>j</sub> he<sub>j</sub>'ll win the election.

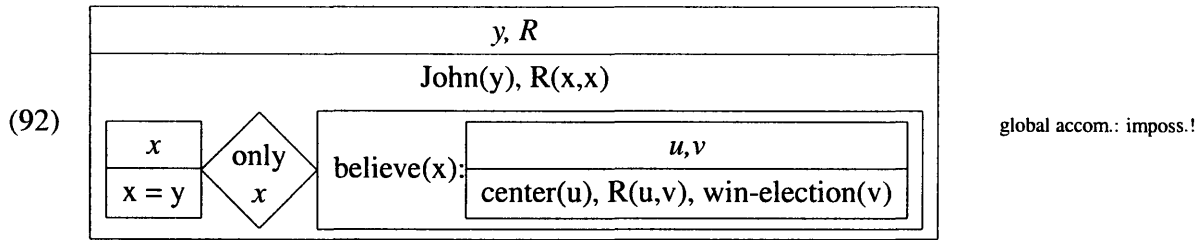


Maier argues that here there are three possibilities: binding to contextually-salient [ $\lambda a \lambda b. a = b$ ], local accomodation (which is false in the strictly *de se* scenario), or global accomodation. Here are the first two:



Global accomodation would produce sentence level existential quantification over relations, which, as I pointed out at the outset, produces truth-conditions that are too weak. Hence it must be

ruled out. And indeed it is impossible, due to scope-trapping (van der Sandt, 1992): the content of the relation presupposition contains the variable  $x$ , which cannot occur outside of the scope of the quantifier which binds them.



This, Maier argues, prevents *Only Bill thinks he will win the election* from being true. However, this is true only if the only salient contextually-supplied relation is the identity relation. Given the original drunken politician scenario, this simply is not true; indeed, in the setup to the scenario I employed relations of the form *the nth candidate x saw on T.V.* Assuming these are salient for *Bill thinks he will win the election.*, they should be salient for the quantificational subject.

Thus, I think that Maier's solution, while elegant, cannot work. The problem seems to lie with the generality of the binding theory for presuppositions. Perhaps it might work if the only salient relation ever introduced by context were the relation of identity. Cases such as *Bill thinks he will win the election.* might then be analyzed as cases of accomodation. As far as I can see, this will produce the correct results for all the cases considered, but it strikes me as a stipulation against the spirit of the proposal. Surely the context *does* add such relations to the discourse model.

### 1.3.4 Specifying *SELF*

While I do not think Maier's specific proposal will work, I do think that he is right to highlight both the fact that the *de se* SELF concept is universally available and that other concepts for the attitude-holder arise from the context. As Chierchia (1989) points out, quantificational sentences ordinarily seem to be understood in the default as attributing a *de se* belief to each element in the domain of the quantifier. The cases with distinct *de re* relations really require a rich context with explicit characterization of other relations.<sup>27</sup> I would like to suggest that the Argument from Only teaches us something about the context dependency of *de re* quantification: namely that while the speaker may choose to shrink the set of contextually provided concepts, he cannot eliminate the SELF concept. I will represent this as follows:

- (93)  $\forall x \in D_e, \forall i \in \kappa,$   
 $\Gamma_C \in D_{(e,\kappa),ese}$  is in *CG* iff.
- a.  $dom(\Gamma(x)(i)) = \{y: x \text{ is acquainted with } y\}$  acquaintance condition
  - b.  $\forall y \in dom(\Gamma(x)(i))$   
 $\Gamma(x)(i)(y)$  is a concept  $f$  such that:
    - i.  $f$  is suitable for  $x$  in  $i$ , and suitability condition

<sup>27</sup>The importance of this fact was pointed out to me by Valentine Hacquard (p.c.).

- ii.  $f(i[\text{AUTH}(i)/x]) = y.$  res condition  
 c.  $\Gamma(x)(i)(x) \in C \cup \{\text{AUTH}\}$  contextual condition

While  $C$  is based on the discourse context, I would like to suggest that it can be a subset of the concepts introduced by the context. Out of the blue,  $C$  will quite likely be empty, in which case generalized *de re* belief will collapse to *de se* belief for the attitude-holder. In general, we think of someone as self-locating, revising our opinion based on the dictates of the context.<sup>28</sup> I would like to argue that this is exactly what happens in the quantificational *only* cases. In order to produce a true sentence,  $C$  is shrunk to the empty set, thus forcing the only relevant *de re* concept to be the SELF concept, given the above. What about the lack of the general wide-scoped reading? Note that all that can be done to alter the contextual dependency of concepts is to shrink  $C$ ; SELF is *always* part of the domain of quantification for the existential. This, I think, is what the Argument from Only tells us, not that there is a dedicated *de se* LF.<sup>29</sup>

## 1.4 The *De Re* Blocking Effect

Having dispatched the Argument from Only, I will now take up P&S's other argument from the ORC. Two proposals have been given for derivation of the ORC. The first, from Percus and Sauerland (2003a), is a crucially syntactic account, based on the theory of movement intervention. P&S assume the ORC is different from the generalization offered above: the prohibition that the *highest de se* element is c-commanded by a *de re* pronoun. They argue that this is accounted for if the *de se* element's interpretation is the product of a dedicated *de se* LF involving movement of the *de se* element. However, I will show that the P&S characterization of the ORC is in fact too weak, and thus that their derivation of it is incomplete.

The second proposal, due to Hardt (2003), is pragmatico-semantic, linking the ORC to more general properties about salience of pronominal items in the discourse. Hardt suggests that what goes wrong in ORC-violating readings is that the *de re* and *de se* pronouns are simultaneously vying to be the the most topical item within the embedded clause. Under such a theory, *de re* and

<sup>28</sup>Stechow (1982, p. 28) offers a specific version of this first the 1st person: "Assume attitude sub me," which amounts to assume that the speaker has a self *de re* ascription.

<sup>29</sup>Irene Heim (p.c.) suggests an alternative proposal, under which once an explicit *de se* concept is mentioned in the discourse with respect to an attitude-holder, it becomes impossible to remove. Heim's evidence comes from scenarios like the following:

- (iv) John, at the club, sees his reflection's pants in flames and thinks, "That guy's pants are on fire. That looks painful. I'm glad my pants aren't on fire."

John thinks his pants are on fire.

Heim suggests that in the above scenario, where John has a *de se* belief that his pants are not on fire, it is infelicitous to report the non-*de se* belief. Informants I have consulted do not agree that the sentence is infelicitous in the scenario. However, they do report that it is somewhat deviant, and thus I will acknowledge that there is something to Heim's observation. Note, though, that what is important here is not any *de se* belief, but one with the same (modulo *de se* concerns) content as the non-*de se* belief. Thus, if John instead has the thought, "That guy's pants are on fire. I'm glad my pants are flame-retardant." the deviance of the target sentence vanishes.

*de se* elements should never be clausemates, contrary to fact. Hardt proposes that apparent clausemates are in fact the product of the *de re* pronoun escaping the scope of the clause at LF. While this account does not suffer from the ORC-specific empirical shortcoming of P&S's proposal, it makes incorrect predictions about the semantic scope of elements that contain the *de re* pronoun.

Building on Hardt's linking of the ORC to Dahl's Puzzle, I will argue that it is in fact the product of a preference for binding locality coupled with a syntactic restriction on what the pronoun may be bound by. I will argue that the ORC diagnoses an important fact about Rule H (Fox, 2000), namely that it is insensitive to the *de se* component of meaning. In the final part of this section, I will show that the local binding approach to the ORC also enables us to derive restrictions on the appearance of pronouns in logophoric contexts in Yoruba. I will thus conclude that the ORC is a sub-instance of a more general DE RE BLOCKING EFFECT, which diagnoses dedicated *de se* LFs. I will make crucial use of this fact in the following two chapters.

### 1.4.1 The Oneiric Reference Constraint

As Lakoff (1972) first explicitly pointed out, dream-reports allow for the possibility of two counterparts to an attitude-holder: the *dream-self*, from whose perspective the dream is reported, and (potentially), and the *dream-counterpart*, who represents the attitude-holder's person in the dream world. Usually, the two are the same, since we usually we dream that we are ourselves. But sometimes they diverge, as in Lakoff's Brigitte Bardot example, where the *de se* dream-self is Brigitte Bardot and the *de re* dream-counterpart is George Lakoff. In this sense, dream-reports are not unlike any other attitude predicate in allowing an attitude-holder to be acquainted with themselves in different ways. However, there is one interesting difference. Whereas other attitude verbs impose no restrictions on interpretive possibilities of *de se* and *de re* pronouns, dream-reports have very stringent requirements:

(94) I dreamt I was Brigitte Bardot and I<sub>B.B.</sub> kissed me<sub>G.L.</sub>. (Lakoff, 1972)

In the Lakoff example, it must be Bardot, the dream-self doing the kissing. As I have shown, this constraint does not seem to be in force for most other attitude predicates. A word is in order regarding the nature of this data. I have encountered many speakers for whom this constraint does not apply, or if it applies, it is cancelable. The best diagnostic I have found to differentiate groups is to choose a *de se* element that is utterly incapable of any action, as in the following:

- (95) a. \* I dreamed I was a carrot and I was chopping me up for dinner.  
b. \* I dreamed I was a bed and I was lying on top of me.  
c. \* I dreamed I was a roaring fire and I sat down to watch my flames play in the darkness.

All of the examples above are a bit situationally strained, since we do not normally dream of ourselves as sentient objects, but it is possible (and surely, in the land of Loony Toons, commonplace). The purpose of the above examples is diagnostic. This section details the judgments of 15 English speakers for whom the above examples are simply ungrammatical (or, rather, attribute motive force to these objects). For the 10 additional speakers who did not report this contrast, I found

that with a rich enough context all of of the putative examples (including the one P&S present) show full ambiguity. For these speakers, I presume there is nothing special about dream reports. This may turn out to be wrong. Finally, it is important to bear in mind that cross-linguistically, when there are obligatory *de se* anaphora licensed in dream reports, the ORC shows up quite strongly, as it does more generally; see Chapter 3 for more details.

As far as I can tell, only one other English verb behaves similarly, *imagine*.<sup>30</sup>

(96) S: My mother is lying in the hospital after a serious surgery. My brother is constantly urging me to visit her, but I am too swamped with work. Finally, in exasperation, he starts lecturing me.

My brother: Imagine that you<sub>mom</sub> were mom and you<sub>me</sub> won't visit you<sub>mom</sub>! How do you think that would make you feel after all those years of sacrifice? [# S]

Starting from this fact, Percus and Sauerland (2003b) show that the relevant problem is c-command: when the *de re* pronoun is further embedded, ambiguity results:

(97) "Johns wife has recently lost her grandfather Bill, who played an important role in her life. As she tries to come to terms with the loss, she shares with John many old memories of hers, and John too begins to recall moments from his past in which Bill played a part. Soon, one image in particular begins to haunt him, and it is from his own wedding: Bill was visibly upset at the wedding, and John never found out why. Probably to wrestle with this question, one night John dreams that he is Bill, and dreams about what the wedding must have been like from Bills perspective. He sees the couple approaching the altar..." (Percus and Sauerland, 2003b, p. 3)

a. # I dreamed I<sub>John</sub> was marrying my<sub>Bill</sub> granddaughter.(Percus and Sauerland, 2003b)

b. I dreamed my<sub>John</sub> wife was walking right past me<sub>Bill</sub>.

As P&S note, there is a felicity contrast between (97a), where the *de se* *my* is c-commanded by the *de re* *I*, and (97b), where there is no c-command relation between the two. Based on this, observation, P&S claim that the relevant generalization is the following:

(98) ONEIRIC REFERENCE CONSTRAINT (Percus & Sauerland's) A sentence of the form *X dreamed that ... pronoun...*

allows a reading in which the pronoun has *the dream-self* as its correlate only when the following condition is met: *some* pronoun whose correlate is the *dream-self* on the reading in question must not be asymmetrically c-commanded by any pronoun whose correlate is *X*. (Percus and Sauerland, 2003b, p. 5)

In other words, the highest *de se* pronoun must be *de re*-free. Note that so far we have only examined clauses containing one *de se* pronoun, so it is unclear if the generalization is correct; in fact, I will show that it is too weak – all *de se* pronouns must be *de re*-free.

<sup>30</sup>Francois Recanati (p.c.) suggested that this is a constraint on tracking pretense. In this regard, it is important to note that *pretend* does not seem to obey the ORC:

(v) My cat, Hobbes, has a particular response that he makes when I call his name.

I pretended that I<sub>Hobbes</sub> was Hobbes and I<sub>me</sub> had just called me<sub>Hobbes</sub>.

First, however, let me sketch how P&S derive their generalization. Their idea is to derive Chierchia's (1989) *de se* property via operator movement, and to reduce the ORC to pre-existing constraints on movement. Within the spirit of their proposal, the LF for obligatorily control can be schematized as follows:

(99) John wants PRO  $\lambda i t_i$  be voted the best diver.

Following Heim and Kratzer's (1998) analysis of relative clause heads, PRO would thus be vacuous in the above structure, although the movement it triggers would clearly not be. P&S propose that the *de se* pronoun in dream report, *pro\**, is precisely the same:<sup>31</sup>

(100)  $[[\text{pro}^*]^g = \emptyset$ .

Thus, the LF of the problematic *I dreamed I was marrying my\* granddaughter* is the following, assuming that the *de re* pronoun is a concept variable bound by the attitude-holder:

(101)  $\lambda w w [I \lambda f [t_f w] \text{ dreamed } [_{CP} \text{ my}^* \lambda x \lambda w' w' [I_f w'] \text{ was marrying } [t_x] \text{'s granddaughter } w'] ]]$

P&S propose that this LF cannot be generated because the *de re* pronoun serves as an intervener for movement:

(102) “Superiority”: At a given point in the derivation, if are faced with the option of moving  $\alpha$  or  $\beta$  to the same position, and  $\alpha$  asymmetrically c-commands and agrees in features with  $\beta$ , don't move  $\beta$ .

The central puzzle for this line of explanation is to explain why a *de re* term agrees in features with *pro<sub>de se</sub>* only if they are both are counterparts of the attitude holder. That is, there must be some formal feature that a *de re* and a *de se* counterpart uniquely share. But now note that the *de re* pronoun is bound, and thus must agree in formal features with its binder (following Heim (1994); see the discussion of von Stechow's theory in Chapter 2 for further elaboration). However, its binder is the attitude-holder, which also serves to constrain the features of a *pro\** in the scope of the attitude (hence, *John dreamed that I\* was Brigitte Bardot* is ill-formed). Hence, P&S argue, there exists the possibility that *pro\** and *de re pro* share formal features as well, indeed the very ones that the attitude verb is attempting to Attract. Assume that this is the case. Then the ORC may be reduced to superiority.

The take-home point from this summary should not be the mechanics of featural agreement, but rather simply that P&S only derive that the highest *pro\** must be *de re* free. Lower *de se* elements are presumably simply cases of variable binding, which, not being instances of movement, will not be governed by the MLC.

However, as I stated at the outset, the very generalization that P&S are attempting to derive is too weak. Consider first the Lakoff example, which, given the theory outline above, should have the following structure:

<sup>31</sup> As Heim (2002) notes, this immediately predicts that *pro\** should be able to occur in relative clauses, and relative clause heads in dream-report contexts. However, P&S propose that this movement is syntactically governed by Attract, which is a probing relation by a head. Plausibly the two heads differ in the types of features they are interested in.

(103)  $\lambda w w [I \lambda f [t_f w] \text{ dreamed } [_{CP} I^* \lambda x \lambda w' w' t_x \text{ was Brigitte Bardot and } [I_f w'] \text{ kissed } [me_x] ]]$

But surely this structure doesn't violate the MLC, given that there is a *de re* free pro\*: the first subject. We can construct many similar examples (here pro\* just signifies *de se* status; only the highest need move):

- (104) a. I am a guard at a local jail who is known for his harsh treatment of prisoners. One night, I am plagued (perhaps by a just God) with dreams that I am one of the prisoners, and I learn just how terrible I can be.  
 #I dreamed that I\* had to keep my mouth shut or  $I_{dere}$  'd be liable to beat me\*.
- b. I am going through a messy divorce with a prominent actor, who is being highly uncooperative. One of my friends suggests that I simply start some bad PR for her, but another (more ethical) friend is unsure: "How would you feel if it were you?" Later that night, I dream that am I my wife, and that I hear rumors about my PR campaign.  
 #I dreamed that before I\* could even get to a reporter, I had already spread all sorts of lies about me\* all over the internet.
- c. I used to be the poor one in my social circle until a sudden death brought an impressive inheritance. Suddenly the invitations are flowing in. I enjoyed the attention for a while, but now I have begun to suspect that people crave my company only for the chance to ask for an inevitable contribution. Just last night, my "friend" Maxine Watson had me over, even had me sit up right next to her, a rare honor. But all Maxine did was talk about how much her foundation needs responsible donors. When I got home, filled with suspicions, I went right to bed, and promptly starting dreaming that I was Maxine, planning last night's party.  
 #I dreamed that I\* placed me next to me\* only so as to squeeze some money from me\*.

All of the above examples are infelicitous, even though P&S's version of the ORC is in fact satisfied. I would like to suggest that these examples indicate a simpler and stronger generalization:

(105) ONEIRIC REFERENCE CONSTRAINT Every *de se* element must be *de re* free.

Under the superiority-based system above, it is not clear why this should be, since binding by the CP-level lambda-abtractor should be perfectly fine across a *de re* pronoun. I thus suggest that we need to look elsewhere for a derivation of the ORC.

## 1.4.2 A Centering Approach

I will first look at a proposal due to Hardt (2003), which seeks to assimilate the ORC to his solution to Dahl's Puzzle. Hardt notices that the ORC is remarkably similar to the prohibitions that arise in an ellipsis puzzle originally due to Dahl (1973). Dahl observed that in ellipsis contexts with two pronouns, of the four sloppy/strict pairs, some are forbidden:

- (106) a. John said he saw his mother. Bill did to  $\langle$ say he saw his mother $\rangle$ .  
 b. Bill said John saw John's mother.



- c. Bill said Bill saw John's mother.
- d. Bill said Bill saw Bill's mother.
- e. \* Bill said John saw Bill's mother.

The generalization (Fiengo and May, 1994; Fox, 2000) is that a strict pronoun cannot c-command a sloppy pronoun, just as with the ORC:

- (107) a. John said his mother saw him. Bill did to  $\langle$ say he saw his mother $\rangle$ .  
 b. Bill said John's mother saw John.  
 c. Bill said Bill's mother saw John.  
 d. Bill said Bill's mother saw Bill.  
 e. Bill said John's mother saw Bill.

Hardt argues that the similarity of pattern begs for an explanation. I agree with him on this, though my approach will be to follow Fox (2000). Hardt proposes that what these structures indicate are the discourse preferences imposed by Centering Theory (Grosz et al., 1995) on topical reference items in a discourse. Throughout a discourse, the topic changes, and thus the center may shift. Hardt (1996) argues that it is center shift which licenses sloppy identity in general in ellipsis. The specific model Hardt adopts assumes that the center has a designated index in the assignment, let's say C for assignment g. Throughout the discourse the center may shift, whereby the value from some other index in the assignment is mapped to C. Thus, when an element is the center, the assignment agrees in referential value on two indices (the center and the original index before center shift). Hardt adopts two rules governing the play between the center and the original index:

- (108) **Centering Requirement:** For any  $i$ , if  $g(C)=g(i)$ ,  $pro_i$  is not well-formed.  
 (109) **Centering Preference:** A  $pro_C$  is preferred to a  $pro_i$ .

The Centering Requirement enforces center-indexing where possible. The Centering Preference merely says that the preference is always to map a pronoun to the most topical discourse referent, though this preference is overridable by pragmatic, syntactic, and morphological requirements. Let's see how this derives Dahl's Puzzle; I will ignore the  $\langle$ strict, strict $\rangle$  case. Suppose that  $g(1)=\text{John}$  and  $g(2)=\text{Bill}$ . Now, in order to get a sloppy interpretation at all, a pronoun must be the center; thus when we begin, there is a center shift:

- (110)  $John_1^{John \rightarrow C}$  said  $he_C$  saw  $[his_C \text{ mother}]_3$ .

As shown above, since one pronoun must be center marked, both must (the Centering Requirement). This structure is invariant for all the readings. If the center does not shift to Bill (when the next sentence is processed), strict identity results. If a shift does occur, we have across-the-board sloppy readings:

- (111)  $Bill_2^{g(C)=John}$  said  $he_C$  saw  $[his_C \text{ mother}]_3$ .  $\langle$ strict, strict $\rangle$   
 (112)  $Bill_2^{Bill \rightarrow C}$  said  $he_C$  saw  $[his_C \text{ mother}]_4$ .  $\langle$ sloppy, sloppy $\rangle$

What about the mixed readings? Hardt points out that for proposes that mixed readings arise via scoping the relevant entity out of the unelided clause, and then simply refer to it anaphorically:

(113) John<sub>1</sub><sup>John→C</sup> [his<sub>C</sub> mother]<sub>3</sub> said he<sub>C</sub> saw e<sub>3</sub>.

(114) Bill<sub>2</sub><sup>Bill→C</sup> said he<sub>C</sub> saw e<sub>3</sub>. ⟨sloppy, strict⟩

As g(3)=John's mother, this serves to derive ⟨sloppy, strict⟩. What about ⟨strict, sloppy⟩? Note in the above that when the definite description scoped out, it left behind a trace bearing the same index; this is simply the DRT convention. But this convention ensures that when a center element moves, it does no good, since the center shifts in the elided clause:

(115) John<sub>1</sub><sup>John→C</sup> he<sub>C</sub> said e<sub>C</sub> saw [his<sub>C</sub> mother]<sub>3</sub>.

(116) Bill<sub>2</sub><sup>Bill→C</sup> said e<sub>C</sub> saw [his<sub>C</sub> mother]<sub>4</sub>. ⟨sloppy, sloppy⟩

But this is the across-the-board sloppy reading, which is not what we want. Hardt assumes that any XP can move out of the elision antecedent, which explains why when *his mother* is the subject, there are no restrictions:

(117) John<sub>1</sub><sup>John→C</sup> [saw him<sub>C</sub>]<sub>4</sub> said [his<sub>C</sub> mother]<sub>3</sub> e<sub>4</sub>.

(118) Bill<sub>2</sub><sup>Bill→C</sup> said [his<sub>C</sub> mother]<sub>4</sub> e<sub>4</sub>. ⟨sloppy, strict⟩

This serves to derive Dahl's Puzzle. Now what about the ORC? First, Hardt assumes that the center may shift in dream-reports to the dream-self; thus, here center-shift will be obligatory. Here are the representations:

(119) I<sub>1</sub><sup>[John→C]</sup> [my<sub>C</sub> wife]<sub>2</sub> dreamed<sup>[Bill→C]</sup> e<sub>2</sub> was marrying me<sub>C</sub>

(120) I<sub>1</sub><sup>[John→C]</sup> [I<sub>C</sub>] dreamed<sup>[Bill→C]</sup> e<sub>C</sub> was marrying [my<sub>C</sub> granddaughter]<sub>2</sub> ⟨Bill, Bill⟩

As Hardt notes, these representations are forced only by the Centering Preference; there is a licit structure for the ungrammatical form, but it involves specifying John-referring terms with I instead of C (and thus violating the Center Preference):

(121) I<sub>1</sub><sup>[John→C]</sup> dreamed<sup>[Bill→C]</sup> I<sub>1</sub> was marrying [my<sub>C</sub> granddaughter]<sub>2</sub> \*Centering Preference

Hardt's approach, in contrast to P&S's, is thus the conspiracy of general discourse factors and scopal interpretation (though he does not specify how the *de se* character of things gets established). Note that it also derives correctly that all *de se* must *de re*-free, since if a *de re* c-commands a *de se* element, movement of the *de re* out of the center shift will also take the *de se* element with it. This is a welcome result. However, insofar as Hardt's approach makes use of movement, it predicts several sorts of interpretative and syntactic effects that simply do not seem to be there. I will consider in the below only cases of ellipsis, since the sentences are less complicated.

First, consider the fact that when a pronoun is strict, not only it, but a surrounding XP should be read *de re*, since it scopes outside the intensional verb *say*. This does not appear to be borne out:

- (122) Mary and Jane, unmarried sisters, are reminiscing about how they thought life would turn out like when they were teenagers. Mary loved dating high school boys her sister's age.

When they would talk about life fifteen years in the future Mary<sub>1</sub> would always say that her<sub>1</sub> husband would be older than her<sub>1</sub>.  
Jane<sub>2</sub> would too ⟨ say that her<sub>1</sub> husband would be older than her<sub>2</sub>.⟩.

Thus, Mary and Jane can talk about Mary's putative future husband, who (in fact) never existed. Similarly, we can try to test the position of the XP by scope-trapping it. First, consider an example with a split antecedent bound by a quantifier within elided clause. The relevant reading is still possible:

- (123) Hermione<sub>1</sub> said that [every wizard]<sub>2</sub> thought that the book about them<sub>1+2</sub> praised her<sub>1</sub> too much. Harry<sub>3</sub> did too ⟨say that [every wizard]<sub>2</sub> thought that the book about them<sub>1+2</sub> praised him<sub>3</sub> too much⟩.

Second, consider a case with an NPI-idiom that contains the sloppy element, where the elided verb is the NPI licenser. If the strict pronoun moved, it would violate two conditions on licensing.

- (124) NPI-idiom  
John<sub>1</sub> doubted that his<sub>1</sub> mother {knew him<sub>1</sub> from Adam, gave him<sub>1</sub> the time of day}.  
Bill<sub>2</sub> did too ⟨doubt that his<sub>1</sub> mother {knew him<sub>1</sub> from Adam, gave him the time of day}⟩.

Finally, Hardt's proposal cannot explain the obviation effects found in (Fox, 2000), since they would violate the **Centering Requirement**.

- (125) John believes that only he likes his mother. Bill does too ⟨believe that only John likes Bill's mother⟩.  
(126) John<sup>1C</sup> believes that only he<sub>1</sub> likes his<sub>C</sub> mother. Bill does too ⟨believe that only he<sub>1</sub> likes his<sub>C</sub> mother⟩.

In sum, Hardt's proposal, while it derives the correct ORC, assumes a mechanism for licensing *de re* pronouns that makes use a movement operation that has no apparent syntactic or semantic effects on the the surrounding context of the pronoun. It also does not adequately capture Fox's case of Dahl Puzzle Obviation. I thus take this proposal to be the incorrect method of deriving both Dahl's Puzzle and the ORC.

### 1.4.3 A Binding Economy Approach

While I disagree with Hardt's proposal, I agree with him that there should be a unifying mechanism for both the ORC and Dahl's Puzzle. One important piece of evidence in this direction is that the ORC can be obviated in the same conditions as Dahl's Puzzle – when there is a focus sensitive operator:

(127) John, Bill, and Sam are three friends competing for Mary’s affection. They hound her daily, finally forcing her to complain that they should try and look at things from her perspective. That night, John of them has a dream where he is Mary, being wooed by John, Bill, and Sam. In the dream, the men try to convince Mary of how well they know her by trying to guess her favorite color. Who guesses correctly in the dream:

$S_1$ : only John

$S_2$ : John & Bill

- a. John<sub>i</sub> dreamed<sub>j</sub> that [only he<sub>i</sub>]<sub>k</sub> guessed his<sub>j</sub> favorite color. [ $\checkmark S_1, \#S_2$ ]
- b. John<sub>i</sub> dreamed<sub>j</sub> that he<sub>i</sub> guessed his<sub>j</sub> favorite color. [ $\#S_1, \#S_2$ ]

(127a) violates the ORC, and yet the sentence is acceptable. As pointed out earlier, Fox (2000) demonstrated that Dahl’s Puzzle shows a similar obviation in such contexts.

(128) John said that only he likes his mother. Bill does too.

- (129) a. Bill said that only John likes John’s mother. *<strict, strict>*
- b. Bill said that only Bill likes John’s mother. *<sloppy, strict>*
- c. Bill said that only Bill likes Bill’s mother. *<sloppy, sloppy>*
- d. Bill said that only John likes Bill’s mother. *<strict, sloppy>*

In contrast to the original Dahl’s Puzzle example, the *<strict, sloppy>* reading is possible here. Following insights of Heim (1993); Reinhart (1983), Fox argues that these two facts from a theory of binding that enforces locality under truth-conditional equivalence. Consider the original Dahl’s Puzzle case again. The antecedent sentence has two pronouns, both of which refer to John. Following Reinhart (1983); Gordzinsky and Reinhart (1993), let us assume that binding is preferred to co-reference. Then, there are two binding configurations for the pronouns, one where both are bound by *John*, and one where *he* binds *his*:

(130) John  $\lambda x$  said that he<sub>x</sub>  $\lambda y$  likes his<sub>x</sub> mother. non-local binding

(131) John  $\lambda x$  said that he<sub>x</sub>  $\lambda y$  likes his<sub>y</sub> mother. local binding

As the first pronoun is bound by *John*, these two representations are truth-conditionally equivalent. Fox proposes that in such cases, a principle of the Binding Theory rules out the non-local configuration:

(132) **Rule H:** A variable,  $x$ , cannot be bound by antecedent,  $\alpha$ , in cases where a more local antecedent,  $\beta$ , could bind  $x$  and yield the same semantic interpretation. (Fox, 2000, p. 111)

As we are dealing with cases of ellipsis, there must be a parallelism condition. Let us assume the following:

(133) *NP Parallelism*  
NPs in the antecedent and elided VPs must either

- a. have the same referential value (Referential Parallelism) or
  - b. be linked by identical dependencies (Structural Parallelism)
- (Fox, 2000, p. 117)

With this in force, consider the possible elided structures:

- (134) a. Bill  $\lambda x$ said that he<sub>1</sub> likes his<sub>1</sub> mother. ⟨strict, strict⟩  
 b. Bill  $\lambda x$ said that he<sub>x</sub>  $\lambda y$ likes his<sub>1</sub> mother. ⟨sloppy, strict⟩  
 c. Bill  $\lambda x$ said that he<sub>x</sub>  $\lambda y$ likes his<sub>y</sub> mother. ⟨sloppy, sloppy⟩  
 d. Bill  $\lambda x$ said that he<sub>1</sub> likes his<sub>x</sub> mother. ⟨strict, sloppy⟩

The one to rule out is (134d). Under the PARALLELISM CONDITION, for this to be well-formed, in the antecedent clause, the correspondent of *his* must be bound by *John*. Is there such a representation? Yes, (130). However, with the addition of Rule H, such a representation is blocked, and hence there is no suitable antecedent for the sloppy pronoun in (134d). This derives Dahl's Puzzle.

The account predicts that when Rule H allows non-local binding (because of truth-conditional difference), the ⟨strict, sloppy⟩ reading should be available. Indeed, that is precisely what happens with the obviation cases, where the focus sensitive operator *only* triggers a distinctness in interpretation between local and non-local binding:

- (135) John  $\lambda x$ said that only he<sub>x</sub>  $\lambda y$ likes his<sub>x</sub> mother. non-local binding  
 (136) John  $\lambda x$ said that only he<sub>x</sub>  $\lambda y$ likes his<sub>y</sub> mother. local binding

Local binding yields an interpretation equivalent to John said that he is the only  $x$  who likes  $x$ 's mother, while non-local binding yields John <sub>$i$</sub>  said that he is the only  $x$  who likes his <sub>$i$</sub>  mother. As the two are distinct (i.e. the former implicates that in each of John's say-indices  $i'$  that  $\forall x[x \neq John \Rightarrow \neg(\text{like}(x, x, i))]$ , while the latter that in each  $i$  that  $\forall x[x \neq John \Rightarrow \neg(\text{like}(x, John, i))]$ ). Thus, the non-local binding configuration is available, licensing the analog of (134d).

I would like to pursue this line of explanation for the ORC. Along with P&S, I will assume that the *de se* reading arises from binding by an operator, and that when the *de re* pronoun intervenes, it serves as a closer binder. While P&S derive their operator via movement, I will assume that the operator is base generated in a Comp position, with the semantic effect of introducing the *de se* center coordinate to the assignment function. Here is a first attempt:

- (137) *dream* selects for a CP headed by OP-LOG.  
 (138)  $[[OP-LOG_j \alpha]^g = \lambda i. [[\alpha]^g[AUTH(i) \rightarrow j](i)]$ .

OP-LOG <sub>$j$</sub>  thus just maps the closest *de se* center to index  $j$ , and thus in the scope of such an operator, a pronoun bearing  $j$  will refer to the *de se* center. This version requires OP-LOG <sub>$j$</sub>  to be generated below the index (which it takes as an argument). Note however, that this will not serve

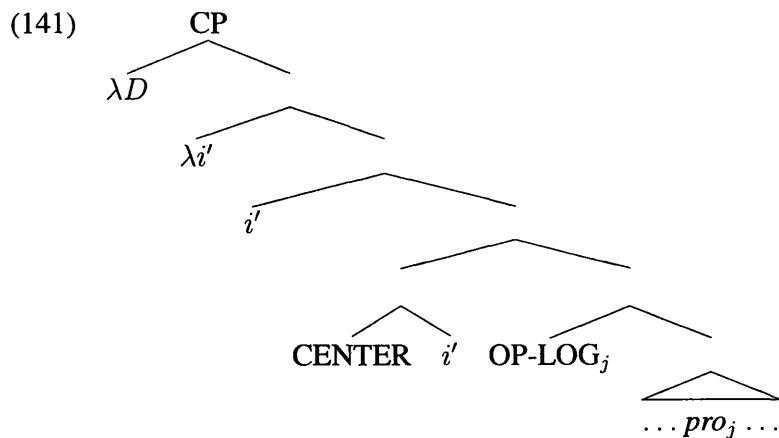
our purposes; *de se* pronouns under this formulation will be syntactically free (though dependent on a higher index node), and hence will not trigger binding competition. Instead, I will propose a more articulated structure, in which the operator is simply an abstractor (as for PRO before):

$$(139) \quad \llbracket \text{OP-LOG}_j \alpha \rrbracket^g = \lambda x. \llbracket \alpha \rrbracket^{g[x \rightarrow j]}.$$

I will assume that the operator is the immediate complement of a referential item, CENTER, which denotes the *de se* center, and gets its value from the index node which it takes as its complement:

$$(140) \quad \llbracket \text{CENTER} \rrbracket^g = \lambda i. \text{AUTH}(i).$$

This is the full articulated CP that this theory assumes:

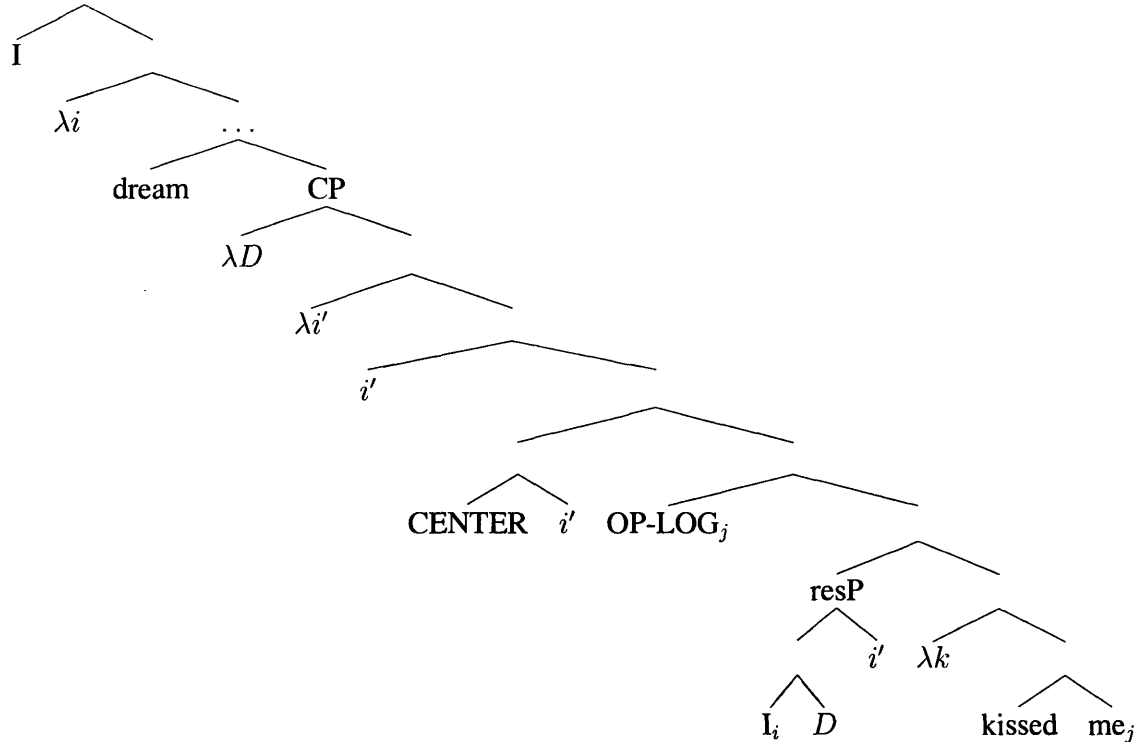


A few notes on this structure. *D*, as above, is the *de re* concept-generator (of which there may be many). Note that there is nothing here that constrains the index complement of CENTER. I will simply stipulate that it is bound by the closest binder, a constraint Percus (2000) independently observes is required in extensional systems to constrain the index that appears immediately below the intensional abstractor.<sup>32</sup>

With this structure in place, I would like to propose the intuition for the proposal. Consider the following structure for  $I_i \text{ dreamed}_j I_i \text{ kissed me}_j$ :

<sup>32</sup>Admittedly, this constraint does not appear to be derivable via movement, unlike Percus' generalization.

(142)



The basic proposal is that the *de se* element is a variable that has two potential competing binders:  $\lambda_j$  (what OP-LOG<sub>*j*</sub> introduces) and  $\lambda_k$ . Because  $\lambda_k$  is closer, it wins. While this structure will violate Condition B, the P&S sentences involving a *my<sub>j</sub> mother* will not, and hence such examples will not be ungrammatical; note, however, that the lower *my* will not be interpreted *de se*, since it is bound by a *de re* element (and thus is interpreted as the dream-counterpart). For dream reports, this will be appropriate, since, in general, this possibility is indistinguishable from one with two *bona fide de re* pronouns owing to the fact that these *de se* pro\* expressions are homophonous with full pronouns. In the following section, I will show that in Yoruba, where the *de se* logophors are phonologically distinct, such a representation is ungrammatical. Thus, I would like to rule such a structure out. I will assume, following Kratzer (1998); Heim (2002); Stechow (2002) that pro\* elements bear the syntactic feature [log], which means that they *must* be bound by a logophoric operator (cf Koopman and Sportiche (1989)).

So, to review the argument now fully, we have the following two binding configurations:

- (143) a. AUTH(*i'*)  $\lambda_j \dots [me_i D i'] \lambda_k$  kissed  $me_j^{[log]}$  non-local binding  
 b. AUTH(*i'*)  $\lambda_j \dots [me_i D i'] \lambda_k$  kissed  $me_k^{[log]}$  local binding

Assume that by Rule H these count as competitors. Then the non-local structure (143a) is ruled out, forcing local binding (143b). However, the local binding configuration violates the syntactic binding condition that [log] elements must be bound by a logophoric operator, and hence it too is ruled out. Thus, a representation in which a *de re* element c-commands a *de se* anaphor is systematically ruled out by the system:

(144) *De Re* Blocking Effect

All [log] (pro\*/*de se* anaphor) elements must be *de re* free.

In the following section, I will show that this correctly derives the conditions on Yoruba logophoric interpretation.

First, however, it is necessary to ensure that these two binders are competitors. As Rule H stands, they are not, since binding by  $\lambda k$  produces a *de re* reading while binding by  $\lambda j$  produces a *de se* reading; these are truth-conditionally distinct.<sup>33</sup> I thus must modify Rule H to be insensitive to the *de se* distinction. However, more must be done, given that it is not simply *de se* that is at issue: in the dream, the dream-counterpart and the dream-self are not identical modulo *de se*.

I would like to suggest two modifications. The first, based on Kehler (1993) will be to argue that Rule H is sensitive to denotational equivalence, not truth-conditional equivalence. This will serve to remove the difference owing to *de se* entailments. However, dream reports are still unaccounted for by this alteration: the two pronouns are not denotationally equivalent. What I would like to suggest, however, is that, because they are counterparts, they *are* denotationally equivalent outside the scope of the intensional quantification. Let me spell this intuition out a bit more. Consider the case of drunken John again:

- (145) John comes late one night, drunk and without his keys. Undeterred, he smashes through a back window and goes up to bed. By the morning, he has forgotten the whole incident, and is shocked to see the back window broken into pieces. Fearing that he is being robbed, he runs upstairs to check his safe.

John<sub>i</sub> hoped<sub>j</sub> that he<sub>i</sub> hadn't yet found his<sub>j</sub> safe.

As I analyzed these, the two embedded pronouns are in fact both interpreted *de re*, though with respect to two different *de re* descriptions (presumably  $f_1 = [\lambda x \lambda i. \text{the window-breaker in } \text{WORLD}(i) \text{ at some time before } \text{TIME}(i)]$  and  $f_2 = [\lambda x \lambda i. \text{the } y = x] = \text{SELF}$ . By the presuppositions of *de re* ascription,  $f_1(\text{John}, i@) = f_2(\text{John}, i@) = \text{John}$ . This is, I think, what Rule H is sensitive to: the fact that the descriptions must evaluate to the same individual in the matrix world.

Now this is all well and good for two *de re* terms, but what about a *de se* variable, that is bound by an operator? I would like to argue that in this case what Rule H examines is the *de re* description that yields this *de se* reading, and this is, of course, the SELF relation. That, in a nutshell, is the intuition. In the remainder of this section, I will try to formalize this a bit more. As will become clear, there are many problems and the account becomes highly stipulative.

I will begin by spelling out this principle of evaluating the *de re* descriptions in the matrix world. I will define the notion of *referential alternative*. There are two cases to consider: *de re*

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<sup>33</sup>The existence of this problem suggests that perhaps the *de se/de re* distinction is not truth-conditional at all. This appears to be the position of Boer and Lycan (1986) and Higginbotham (1992), though neither proposal adequately explains the differences in felicity. Note however, that I will argue that Rule H be modified to consider denotational equivalence alone. As such, if the *de re* and *de se* were denotationally equivalent, just with different *de re* descriptions associated with them, it might be possible to capture this constraint. Schlenker (2003), for instance, suggests that *de se* pronominals come with a presupposition of the form "center of index *i*," where *i* must be bound; this is the analog of the constraints we proposed for obligatory *de se* PRO. But then the competitors for binding would be an index and an individual (the *de re* intervener). I do not see how this would work. In addition, it is not clear that it is adequate for dream reports, in which the two individuals are distinct.



terms and *de se* variables. Let me start with *de re* terms. Recall that the *de re* descriptions  $D$  are analyzed as variables of type  $\langle e, \kappa e \rangle$ , functions from individuals to concepts. Thus,  $[D x]$ , for term  $x$  of type  $e$  is a concept. It is this which serves as the referential alternative for a *de re* term.

(146) For any  $\alpha \in D_e$ , if  $\alpha$  is of the form  $[f i']$ , where  $f \in D_{\kappa e}$  and  $i' \in D_{\kappa}$ , let  $\text{Ref-Alt}(\alpha) = f$ ,

Now for variables. In this case, the referential alternative should be the concept that would have provided an appropriate *de re* reading, which is the concept of the binder:

(147) Otherwise, let  $\text{Ref-Alt}(\alpha) = \text{Ref-Alt}(\beta)$ ,  $\beta$  the sister of the binder of  $\alpha$ .<sup>34</sup>

Thus, we have the following:

(148) REFERENTIAL ALTERNATIVE

For any term  $\alpha \in D_e$ ,

- a. If  $\alpha$  is of the form  $[f i']$ , where  $f \in D_{\kappa e}$  and  $i' \in D_{\kappa}$ , let  $\text{Ref-Alt}(\alpha) = f$ ,
- b. Otherwise, let  $\text{Ref-Alt}(\alpha) = \text{Ref-Alt}(\beta)$ ,  $\beta$  the sister of the binder of  $\alpha$ .

Given this, we can define a notion of referential equivalence with respect to an index:

(149) REFERENTIAL EQUIVALENCE

$\alpha$   $i, g$ -Referentially Equivalent  $\beta$  iff.  $[\text{Ref-Alt}(\alpha)]^g(i) = [\text{Ref-Alt}(\beta)]^g(i)$

Finally, I must modify Rule H (cf. Kehler (1993); Schlenker (2005)):

(150) **Rule H-mod *de se*:**

- a. In attitude contexts:  $[i \text{ att } [V_{int}] \lambda j j \dots]$  under assignment  $g$   
A variable,  $x$ , cannot be bound by antecedent,  $\alpha$ , in cases where a more local antecedent,  $\beta$ , could bind  $x$ , such that  $[\mathbf{x}_\alpha]^g i[\text{AUTH}(i)/\text{att}]$ ,  $g$ -Referentially Equivalent  $[\mathbf{x}_\beta]^g$ .
- b. Elsewhere contexts: A variable,  $x$ , cannot be bound by antecedent,  $\alpha$ , in cases where a more local antecedent,  $\beta$ , could bind  $x$ , such that  $[\mathbf{x}_\alpha]^g = [\mathbf{x}_\beta]^g$ .

Let me show how this will work for the Lakoff example above. There are two competing binders here,  $\text{OP-LOG}_j$  and  $\lambda k$ . As this is an attitude environment, we must determine whether the variable  $me$  is  $i$ -Referentially Equivalent under the two bindings. In order to do that, we must compute the Ref-Alts for these two binding cases. First, suppose it is bound by  $\text{OP-LOG}_j$ . Then  $\text{Ref-Alt}(me_j) = \text{Ref-Alt}(\text{sister of } \text{OP-LOG}_j) = \text{Ref-Alt}([\text{CENTER } i']) = \text{CENTER}$ . Similarly,  $\text{Ref-Alt}(me_k) = \text{Ref-Alt}(\text{sister of } \lambda k) = \text{Ref-Alt}([\text{I}_i \text{ D}] i') = [\text{I}_i \text{ D}]$ . Now for assignment  $g$  and index  $i_d = i[\text{AUTH}(i)/\text{att}]$  are these  $i_d, g$ -Referentially Equivalent? For the present example, yes. Note that even though  $D$  is a variable, its definedness conditions ensure that it will evaluate to the res (here,  $g(i)$ ) in the derived index  $i_d$ . Similarly,  $\text{AUTH}(i_d) = \text{att} = g(i)$ . Hence these are  $i_d, g$ -Referentially Equivalent, and by the modified Rule H, the long-distance binding is blocked.

<sup>34</sup>This is highly stipulative. I do not currently see how to improve on it.

There are several problems with this system. First, it is clearly simply an expression of the phenomenon, and not explanatory in the slightest. In addition, the system cannot explain the fact that the *De Re* Blocking Effect disappears in the presence of focus-sensitive operators. A focus sensitive operator effects the truth conditions of the utterance, not the denotations of the particular terms. This is perhaps easiest to see with an example from Fox:

- (151) Everybody hates Lucifer. In fact, Lucifer  $\lambda x x$  knows very well that [only he<sub>x</sub> (himself)]  $\lambda y y$  pities him<sub>x/y</sub>. Fox (2000, ex. 34, p. 124)

The contribution of *only* is its implication regarding the domain minus Lucifer; the assertion is, regardless of which abstractor binds *him*, the Lucifer knows that Lucifer pities Lucifer. Thus, the local and non-local configurations are denotationally equivalent, and this sentence should violate Condition B. Schlenker (2005) argues that this sentence does not violate Condition B because in fact the grammar treats the bound *he* and *himself* as different individuals, in the sense of Heim (1998): they are different *guises* (i.e., individual concepts) that evaluate to the same individual. Schlenker presents two motivating facts. First, for some speakers, a focus sensitive operator is not necessary to license the Condition B violations:

- (152) Presque tout le monde déteste Lucifer. En fait, Lucifer sait fort bien que lui seul  
 Almost everyone hates Lucifer. In fact, Lucifer knows perfectly well that CL only  
 l'aime. 'Aimer' est d'ailleurs un terme qui est trop faible: il l'adore.  
 he-likes. 'Like' is in fact a term which is too weak: he CL-adores  
 'Almost everybody hates Lucifer. In fact, Lucifer knows perfectly well that only he likes  
 him. 'Like' is in fact a term which is too weak: he adores him. (Schlenker, 2005, ex. 121,  
 p. 43)

I think Schlenker is correct; with contrastive focus on *adore* the sentence is perfect, even without the presence of a focus sensitive operator. Schlenker also notes that in these cases it is possible to refer to Lucifer with a plural pronoun, indicating the two guises:

- (153) Tout le monde déteste Lucifer. Même Lucifer le déteste. (Il faut dire qu'ils ont  
 everyone hates Lucifer. even Lucifer CL hates. (It must say that-they have  
 déjà eu maille à partir  
 already had mesh to part  
 'Everybody hates Lucifer. Even Lucifer hates him. (It should be added that they have  
 already had problems (with each other).') (Schlenker, 2005, ex. 124b, p. 43)

While both of these might indicate that guises are the culprit in the cases Fox considers, it is not clear how such a theory would extend to the dream report cases considered above. As both pronouns *are* concepts, we predict that regardless of the presence of *only* there will be no Condition B violation. This is, of course, true, as Gordinzky and Reinhart (1993) point out. But the asymmetry I have been trying to derive is lost: there should be ambiguity as to who is kissing whom. I do not at present know how to make this work, and will leave resolution to future research.

#### 1.4.4 Blocking in Yoruba

While the precise explanation for the *De Re* Blocking Effect might still be elusive, I would like to argue that it is observed as well in the licensing of logophoric environments in Yoruba. Logophoric pronouns were first discussed by Hagège (1974) for the case of Mundung, who described them as anaphoric elements that obligatorily appear in reported speech. Clements (1975), considering the Ewe element *yè*, concluded that logophors have three essential properties:

- (154) a. RESTRICTED TO VERBS OF SPEECH: “logophoric pronouns are restricted to reportive contexts transmitting the words or thought of an individual or individuals other than the speaker or narrator” (Clements, 1975, p. 171);
- b. ANTI-LOGOPHORICITY: non-logophoric pronouns in reportive contexts must be disjoint from the antecedent of a logophor;
- c. AUTHOR-DENOTING: the antecedent for the logophor must be the individual whose words are being reported.

The latter two requirements can be shown by considering cases such as the following:

- (155) a. kofi be *yè*-dzo  
Kofi say LOG-leave  
Kofi<sub>i</sub> said he<sub>i</sub> left. (Clements, 1975, p. 160, ex. 1)
- b. kofi be e-dzo  
Kofi say 3S-leave  
Kofi<sub>i</sub> said she/he<sub>\*i,j</sub> left. (Clements, 1975, p. 160, ex. 3)

The range of items deemed logophoric in contemporary literature is quite diverse: long-distance anaphora (Sells, 1987; Li, 1991; Kameyama, 1984), reflexives in picture-NPs (Kuno, 1987), antecedentless intensives (Zribi-Hertz, 1989), and expressions like the West African forms shown above; the conditions Clements defines above are held by these forms to varying degrees. In Chapter 3, I will consider the status of long-distance anaphora, and demonstrate that while under Clements definition they are not logophoric, they should be analyzed by the methods we use to analyze logophors. The remaining forms I will leave to future research. For now, I will concentrate on West African languages, and, in particular, Yoruba.<sup>35</sup>

Even within African languages, the reportive restriction above is not universal. For instance, Koopman and Sportiche (1989) demonstrate that in Abe there are two sets of 3rd person pronouns, the *O* series, and the *n* series. Underneath verbs of saying headed by the complementizer *kO*, the forms show the behavior of *e* and *yè* above – the *O* form must be disjoint from the attitude-holder, while the *n* may refer to attitude-holder:

- (156) *yapi*<sub>i</sub> hE kO *O*<sub>\*i/j</sub>/*n*<sub>i/j</sub> ye sE  
Yapi said kO he is handsome  
‘Yapi<sub>i</sub> said that he<sub>i</sub> is handsome.’ (only possible with *n*) (Koopman and Sportiche, 1989, ex. 66b, p. 580)

<sup>35</sup>When data is unattributed, it refers to personal fieldwork with 5 native speakers living in Boston.

The anti-logophoricity effect for *O* is apparent; it must be disjoint from Yapi. However, while *n* may refer to Yapi, it need not, in which case its reference is free. Indeed, *n* may occur outside of logophoric verbs and still be licensed, in contrast to *yè* in Ewe:

- (157) *yapi<sub>i</sub> wu n<sub>j/\*i</sub>*  
 Yapi saw him  
 ‘Yapi<sub>i</sub> saw him<sub>j</sub>.’ (Koopman and Sportiche, 1989, ex. 11a, p. 560)

Koopman and Sportiche (1989) argue that *n* is licensed by a null operator in Comp, and that apparent free forms of *n* are the product of operator binding. Indeed, when two *n*’s are clausemate, they may be disjoint only if there are two Comps c-commanding them:

- (158) *n<sub>i</sub> ceewu n kolo n<sub>i/\*j</sub>*  
 his friend DET likes him  
 ‘His<sub>i</sub> friend likes him<sub>i</sub>.’ (Koopman and Sportiche, 1989, ex. 41, p. 579)

- (159) *api bOwu ye n<sub>i/j</sub> kolo n<sub>i/j</sub>*  
 Api believes ye he likes him  
 ‘Api believes he<sub>i/j</sub> likes him<sub>i/j</sub>.’ (Koopman and Sportiche, 1989, ex. 44a, p. 579)

If this hypothesis is correct, it suggests that syntactic constraints such as the *De Re* Blocking Effect will hold for logophoric expressions. On the face of it, Abe seems to not be subject to it, as the *O* series pronouns are simply impossible in logophoric domains.

However, the case of Yoruba is different. Like Abe, Yoruba has two pronominal categories, weak or clitic pronouns, and strong forms. Here, we will be concerned with the 3rd person forms *ó* (weak) and *oun* (strong), as the 1st and 2nd person forms do not show logophoric effects; I will return to this below.<sup>36</sup> Pulleyblank (1986) demonstrated that *oun* shows logophoric effects underneath certain verbs:

- (160) *ó<sub>i</sub> r’i pé oun<sub>i</sub> ni òwó*  
 o see that oun be money  
 ‘He<sub>i</sub> saw that he<sub>i</sub> had money.’ (Pulleyblank, 1986)

Crucially, the pronoun *oun* above must be read *de se*: it can only be used to describe a situation where the subject deduced “I have money.” Thus, if the subject sees that there is money in a mailbox on a far wall, but does not take that mailbox to be his, the sentence is infelicitous. This effect may be seen more easily with verbs of speech (here the scenario must be something like He said, “I saw John.”):

- (161) *ó<sub>i</sub> so pé oun<sub>i</sub> r’i John*  
 o say that oun see John  
 ‘He<sub>i</sub> said that he<sub>i</sub> saw John.’

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<sup>36</sup>The status of both of these as pronouns is a subject of much controversy. See Awobuluyi (1978); Dechaine (1992) for treatments of *ó* as agreement. See Manfredi (1995); Bisang and Sonaiya (1999) for treatment of *oun* as a name. Here, I will assume they are pronouns based on their argumental distribution. If *ó* indicates agreement, it indicates agreement with a null proform. If *oun* is a name, it is unclear how it can be subject to logophoric effects.

The class of verbs that trigger logophoric interpretation in Yoruba is much wider than reported in Ewe, Mundung, or Abe. It includes: *dunnu* ‘rejoice’, *gbà* ‘agree’, *bèèrè* ‘ask’, *so* ‘say’, *n í* ‘say’, *fi èhónú hán* ‘protest’, *mò* ‘know’, *fé* ‘want’, *n írèt í* ‘hope’, *dàhùn* ‘answer’, *kabamò* ‘regret’, *gbó* ‘hear’, *ro* ‘think’, *gbàgbó* ‘believe’, *gbàgbé* ‘forget’, *lér í* ‘boast’, and, crucially for us, *alaa* ‘dream’.

While (Pulleyblank, 1986; Manfredi, 1987, 1995) claim that correspondingly with Abe and Ewe, Yoruba shows antilogophoric effects, Adesola (2005) demonstrates that in fact weak forms can occur within verbs that license logophoric interpretations of *oun*:

- (162) Olú ti kéde pé ó<sub>i,j</sub> n bò lóla  
 Olu PERF announce that o PROG come tomorrow  
 ‘Olu<sub>i</sub> has announced that he<sub>i,j</sub> is coming tomorrow.’ (Adesola, 2005, ex. 44, p. 205)

Note that in the example above, there is no *de se* claim at all. The sentence above strongly favors a *de se* construal of the embedded co-referential *o*, but other sentences show the *de re* reading is also available:

- (163) John ro pé ó<sub>i,j</sub> n yégun jàjìyànja `ìjàdù  
 John think that o PROG win contest  
 ‘John<sub>i</sub> thought he<sub>i,j</sub> would win the contest.’

This can be used to describe both a *de se* and non-*de se* belief of John’s regarding the outcome of the diving voting. Thus, Yoruba does not show anti-logophoricity effects. As Adesola demonstrates, the crucial test in Yoruba is whether the weak form c-commands the strong form; if it does not, co-reference is possible.

- (164) Adé<sub>i</sub> so pé oun<sub>i</sub> ti r’í `ìwé rè<sub>i,j</sub>  
 Ade say that oun PERF see book o-gen  
 ‘Ade<sub>i</sub> said that he<sub>i</sub> has seen his<sub>i,j</sub> book. (Adesola, 2005, ex. 61, p. 214)
- (165) Olu<sub>i</sub> so pé o<sub>\*i,j</sub> r’í bàbá òun<sub>i</sub>  
 Olu say that o see father oun-gen  
 ‘Olu<sub>i</sub> said that he<sub>\*i,j</sub> has seen his<sub>i</sub> father. (Adesola, 2005, ex. 59a, p. 213)
- (166) Olu<sub>i</sub> so pé bàbá rè<sub>i,j</sub> ti r’í `ìyá òun<sub>i</sub>  
 Olu say that father o-gen see mother oun-gen  
 ‘Olu<sub>i</sub> said that his<sub>i,j</sub> father has seen his<sub>i</sub> mother. (Adesola, 2005, ex. 60, p. 213)

Again, there is no *de se* commitment regarding the status of the weak forms in (164) or (166). Nor does changing the construal of the weak form in (165) alter the judgment. This is reminiscent of the *De Re* Blocking Effect. Thus, when an offending weak form is replaced with a strong form, a sentence becomes acceptable:

- (167) Olu<sub>i</sub> so pé oun<sub>i</sub> r’í bàbá òun<sub>i</sub>  
 Olu say that oun see father oun-gen  
 ‘Olu<sub>i</sub> said that he<sub>i</sub> has seen his<sub>i</sub> father.’

Thus, the constraint is, as with *pro*\* elements in dream reports, that the *de se* element cannot be c-commanded by a form that is interpreted via *de re* construal, or, rather that a [log] form must depend on OP-LOG. If both *ouns* are bound variables, the explanation for this follows. Indeed, we can, as before with dream reports, show that the relevant constraint is with respect to any sequence of weak and strong pronouns, not simply the highest strong pronoun:

- (168) a. John<sub>i</sub> gbàgbó pé bàbá òun<sub>i</sub> fún un<sub>\*i/j</sub> `iwé oun<sub>i</sub>  
 John believe that father oun-gen give o.acc book oun.gen  
 ‘John<sub>i</sub> believed that his<sub>i</sub> father gave him<sub>\*i,j</sub> his<sub>i</sub> book.’  
 b. John<sub>i</sub> gbàgbó pé bàbá òun<sub>i</sub> fún `iyá rẹ̀<sub>i/j</sub> `iwé oun<sub>i</sub>  
 John believe that father oun-gen give mother o.gen book oun.gen  
 ‘John<sub>i</sub> believed that his<sub>i</sub> father gave his<sub>i,j</sub> mother his<sub>i</sub> book.’

In the above pair, the indirect object *o* c-commands a *òun* in the theme; the sentence is ungrammatical with co-reference, regardless of the fact that there is a weak pronoun free *òun* in the clause. One might worry that this is a Condition B violation (though DPs form governing categories for weak pronouns in Yoruba, as well as strong pronouns if the antecedent is a strong pronoun), but it is unbounded, as the next examples show:

- (169) a. Olu<sub>i</sub> so pé oun<sub>i</sub> ro pé Ade<sub>j</sub> sèlér`i fún o<sub>\*i</sub> pé Mary lo k`i bàbá òun<sub>i</sub>  
 Olu say that oun think that Ade promise to o that Mary go see father oun.gen  
 ‘Olu<sub>i</sub> said that he<sub>i</sub> thought that Ade promised him<sub>\*i,j</sub> that Mary would visit his<sub>i</sub> father.’  
 ‘Olu<sub>i</sub> said that he<sub>i</sub> thought that Ade<sub>k</sub> promised him<sub>i,j</sub> that Mary would visit his<sub>k</sub> father.’  
 b. Olu<sub>i</sub> so pé oun<sub>i</sub> ro pé Ade<sub>j</sub> sèlér`i fún `iyá rẹ̀<sub>i</sub> pé Mary lo k`i bàbá òun<sub>i</sub>  
 Olu say that oun think that Ade promise to mother o.gen that Mary go see father òun<sub>i</sub>  
 oun.gen  
 ‘Olu<sub>i</sub> said that he<sub>i</sub> thought that Ade promised his<sub>i,j</sub> mother that Mary would visit his<sub>i</sub> father.’  
 ‘Olu<sub>i</sub> said that he<sub>i</sub> thought that Ade<sub>k</sub> promised his<sub>i,j</sub> mother that Mary would visit his<sub>k</sub> father.’

In essence, *òun* must be *o*-free in the domain of its A'-binder. Finally, and perhaps most importantly for our purposes here, we can replicate these facts in dream reports in Yoruba. First note that in dream reports, the usual condition B effect for the weak pronouns vanish:

- (170) o<sub>i</sub> bú o<sub>\*i/j</sub>  
 o insulted o  
 ‘he<sub>i</sub> insulted him<sub>j</sub>.’  
 (171) John<sub>i</sub> alaa pé o<sub>j</sub> ni Mary e o<sub>i/j</sub> bú o<sub>i/j</sub>  
 John dream that o be Mary and o insulted o  
 ‘John dreamed that he was Mary and he<sub>Mary</sub> insulted he<sub>John</sub>, or he<sub>John</sub> insulted him<sub>Mary</sub>.’

But note something quite interesting: the ORC does not seem to hold in Yoruba with respect to weak pronouns. Strong pronouns, however, still induce Condition B violations, and are obligatorily interpreted as the dream self:

- (172) John<sub>i</sub> alaa pé o<sub>j</sub> ni Mary e oun<sub>j</sub> bú oun<sub>j</sub>  
 John dream that o be Mary and oun insulted oun  
 ‘John dreamed that he was Mary and he<sub>Mary</sub> insulted him<sub>Mary</sub>.’

But now, combining the two, we find the same pattern as in English dream reports: a strong pronoun must be weak pronoun free:

- (173) John<sub>i</sub> alaa pé o<sub>j</sub> ni Mary e oun<sub>j</sub> bú o<sub>j</sub>  
 John dream that o be Mary and oun insulted on  
 ‘John dreamed that he was Mary and he<sub>Mary</sub> insulted him<sub>John</sub>.’
- (174) \* John<sub>i</sub> alaa pé o<sub>j</sub> ni Mary e o<sub>i</sub> bú oun<sub>j</sub>  
 John dream that o be Mary and o insulted oun  
 ‘John dreamed that he was Mary and he<sub>John</sub> insulted him<sub>Mary</sub>.’
- (175) John<sub>i</sub> alaa pé o<sub>j</sub> ni Mary e bàbá o<sub>i</sub> bú oun<sub>j</sub>  
 John dream that o be Mary and father o.gen insulted oun  
 ‘John dreamed that he was Mary and his<sub>John</sub> father insulted him<sub>Mary</sub>.’

I think this is an important finding in favor of assimilating dream report cases and logophoric blocking effects. Note that one might have concluded that they were different processes that led to the same configurational violations, one because the two elements really do co-refer (in the initial Yoruba examples above), and the other because of another syntactic process. But notice that in Yoruba the generalization in dream reports is precisely what one expects if the English pronouns are ambiguous between *de re* forms and *de se* anaphora. The true *de se* anaphora, bound by an OP-LOG, are subject to a grammatical intervention effect that two pronouns are not subject to. Thus, for weak pronouns, Yoruba patterns with other attitude predicates in English, while for strong pronouns it patterns with two dream pronouns in English.

So, all of this aligns with what has been observed for English dream reports, suggesting that Koopman and Sportiche (1989) were right to characterize logophoric interpretation as binding by a syntactic operator, given that both dream reports and Yoruba logophors are subject to a condition on syntactic prominence of a particular kind of intervener. I would like to dwell on this fact a bit before continuing. In opposition to a syntactic account, Sells (1987) argued that logophoricity was a semantic phenomenon, the result of how three discourse predicates, the SOURCE, SELF, and PIVOT were updated in the interpretation of a discourse representation.<sup>37</sup> Sells couched his theory in DRT, but it is simple enough to re-characterize it as a series of slots in the evaluation sequence:  $[[\alpha]]_{g, self, source, pivot}$ . Suppose that predicates may update these values, so that a logophoric verb simply sets the *self* value to the attitude-holder. One potential advantage of this proposal is that it can elegantly handle the unbounded nature of logophoric dependency, as can be shown in Yoruba:

<sup>37</sup> SELF: the element whose mental states are being expressed; SOURCE: the communicative agent; PIVOT: the deictic perspective of some element. Note that Sells suggests that all West African logophors are SOURCE, in accordance with Ewe and Mundung (and possibly Abe), but not with Yoruba, where SELF is clearly active as well.

- (176) Ade<sub>i</sub> mò pé Olu<sub>j</sub> so pé John<sub>k</sub> kabamò pé Mary fèràn òun<sub>i,j,k</sub>  
 Ade know that Olu say that John regret that Mary like oun  
 ‘Ade<sub>i</sub> knows that Olu<sub>j</sub> said that John<sub>k</sub> regretted that Mary liked him<sub>i,j,k</sub>.’

But there are problems with this proposal. First is the fact that two logophoric òun within the same clause need not co-refer, which is unexpected if the SELF slot is overwritten in the course of evaluation:

- (177) Olu<sub>i</sub> so pé Ade<sub>j</sub> ro pé bàbá oun<sub>i/j</sub> ti r’í `ìyá òun<sub>i/j</sub>  
 Olu say that Ade think that father oun.gen PERF see mother oun.gen  
 ‘Olu<sub>i</sub> said that Ade thought that his<sub>i/j</sub> father had seen his<sub>i/j</sub> mother.’

The second problem has to do with the types of elements that may serve as logophoric antecedents. Until now, I have confined the discussion cases where the antecedent is the attitude-holder. But it is also possible for the antecedent to be another argument of the verb:

- (178) Olu<sub>i</sub> gbà fún Ade<sub>j</sub> pé bàbá oun<sub>i/j</sub> ti r’í `ìyá òun<sub>i/j</sub>  
 Olu accept for Ade that father oun.gen PERF see mother oun.gen  
 ‘Olu<sub>i</sub> agreed with Ade<sub>j</sub> that his<sub>i</sub> father should see his<sub>i,\*j</sub> mother.’  
 ‘Olu<sub>i</sub> agreed with Ade<sub>j</sub> that his<sub>j</sub> father should see his<sub>\*i,j</sub> mother.’

One might think that this merely indicates that *gbà* licenses both SELF logophors and some other type. But such an analysis misses two crucial points. First, note that in the above example the two òun must be co-referential; this suggests that there is only *one* operator position that a logophoric predicate makes available. Second, when òun refers to Ade, it must be read *de te*, in contrast with the weak pronoun:

- (179) Olu and Ade are talking about a married couple in the neighborhood who are experiencing marital troubles. The husband finally left one morning, and Olu and Ade agree that the husband should go see the wife. Olu is unaware that Ade is their son (and Ade doesn’t really want it known too widely).
- a. # Olu<sub>i</sub> gbà fún Ade<sub>j</sub> pé bàbá oun<sub>j</sub> ti r’í `ìyá òun<sub>j</sub>  
 Olu accept for Ade that father oun.gen PERF see mother oun.gen  
 ‘Olu<sub>i</sub> agreed with Ade<sub>j</sub> that his<sub>j</sub> father should see his<sub>j</sub> mother.’
- b. Olu<sub>i</sub> gbà fún Ade<sub>j</sub> pé bàbá rẹ<sub>j</sub> ti r’í `ìyá rẹ<sub>j</sub>  
 Olu accept for Ade that father oun.gen PERF see mother oun.gen  
 ‘Olu<sub>i</sub> agreed with Ade<sub>j</sub> that his<sub>j</sub> father should see his<sub>j</sub> mother.’

Under a story with arbitrary discourse predicates, neither of these would be expected. Instead, I would like to suggest that what examples of binding optionality show is variation in what can be the sister of OP-LOG. Earlier, I had designed CENTER to be AUTH. The above suggests that



*gbà* may select either AUTH or ADDR, the second parameter quantified over by the intensional operator.<sup>38</sup>

In sum, the Yoruba facts regarding logophoric interpretation fit nicely with the *De Re* Blocking Effect generalization I was advocating based on English dream report sentences. It is important to note that the effect showed up in Yoruba for logophoric elements in both dream reports and outside dream reports. That is, *alaa* is not exceptional in Yoruba (except in ameliorating Condition B); all logophoric verbs are subject to the *De Re* Blocking Effect. The puzzle, however, that emerges is why the attitude predicates in English behave the way they do: why is dream unable to simply interpret two pronouns *de re* and circumvent the blocking effect? It is this puzzle I will turn to below.

### 1.4.5 On Anti-logophoricity

Let me summarize what we have seen regarding logophoric environments in English, Yoruba, and to some extent, Abe. Let me start with English. Given the contrast between *dream* and *think*, English dream reports seem to disallow a pronoun from being read *de se*, and instead defer to a logophoric pronoun. The same might be a characterization of Abe; Koopman and Sportiche claim that Abe disallows *O* pronouns in logophoric contexts, but it might simply be that these elements are disallowed when they are interpreted *de se*, which, as we now know from the discussion regarding the Argument from Only, is contextually the most salient concept to interpret a subject with respect to. This needs to be tested, but I will assume it for now. Thus, English (and perhaps Abe/Ewe) seem to obey a competition principle: insert a dedicated *de se* form when a *de se* reading is desired. Thus, outside logophoric contexts (i.e., most attitude verbs in English), *he* may be read *de se* as much as it likes, since there is no OP-LOG to license the *de se* anaphor.<sup>39</sup>

Yoruba, on the other hand, shows nothing of the sort. As we saw, even when a logophoric òn is interpreted *de se*, a weak form may appear and be read either *de re* or *de se*. Why should this be, given a competition story? Perhaps weak and strong pronouns are equal on the relevant scale in Yoruba. However, we will see that this same optionality holds elsewhere: with Zazaki shifted indexicals and Mandarin long-distance *ziji*. What I would like to suggest is that the culprits in this puzzle are the attitude verbs themselves. Specifically: if *dream* simply blocked concept generators that specified the SELF concept (i.e., AUTH), we would have a natural account of why one must use the logophor when possible. Thus, I would like to suggest that English *dream* and the logophoric verbs in Abe select for a particular type of concept generator:

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<sup>38</sup>I do not attach any special theoretical status to ADDR, given that we simply do not have a sufficient number of test cases that demonstrate whether it is literally the *de re* person-being-spoken-to or something more general. Here, however, it should be noted that *gbà* is acceptable only in situations where people are conversing. I cannot agree with, for instance, David Lewis regarding the status of acquaintance relations using *gbà*. Hence the analogy with object communication verbs is upheld in this case.

<sup>39</sup>Another possibility for English would be that *dream* simply does not allow for multiple quantifiers over concept generators; recall that under the movementless existential approach to *de re*, since the concept generator is bijective between concepts and individuals in the domain of acquaintance, multiple *de re* descriptions for a single *res* require the insertion of an additional concept generator. Perhaps there simply is no relevant lexical entry for *dream* that takes an argument of type  $\langle e, e, e, e, e, t \rangle$ . This, however, would not handle the Abe case.

(180)  $[[\text{dream}]]^g = \lambda P_{\langle \text{ese} \rangle, \kappa t} \lambda \text{att}_e \lambda i_\kappa. 1$  iff.  $\exists \Gamma_C \in CG_{\text{selfless}} [\forall i' DOX_{\text{att}i} [P(\Gamma(x)(i))(i') = 1]]$ .

The  $CG_{\text{selfless}}$  are merely those that restrict the set of available concepts under which the attitude-holder can refer to himself further:

(181)  $\forall x \in D_e, \forall i \in \kappa,$   
 $\Gamma_C \in D_{\langle e, \kappa \rangle, \text{ese}}$  is in  $CG_{\text{selfless}}$  iff.  
 a.  $\Gamma \in CG$ , and  
 b.  $\Gamma(x)(i)(x) \in C \setminus \{\text{AUTH}\}$ .

selfless condition

This condition ensures that it is impossible to interpret an ordinary pronoun *de se* using  $\Gamma$ . Thus, under *dream*, there is only one option: use the logophoric *de se* anaphor. This formulation predicts that quantified attitude-holders cannot have some *de se* and some non-*de se* attitudes with respect to themselves in dream reports:

(182) It's inauguration day. John, Bill, and Sam, three losing candidates, watch George get sworn in, go home, and drown their sorrows. They each fall asleep. John dreams that he is George, and sees himself down in the stands, watching the inauguration. Bill and Sam have loftier ambitions. Sam dreams that he is a member of Sam's campaign, and watches as Sam wins the Presidency. His dream closes with him looking on as he[de re] gets sworn in. Bill has a similar dream: his counterpart gets voted in in the dream.

a. Sam dreamed he was President. {Bill, \*John} did too.  
 b. ??[Each of them]<sub>i</sub> dreamed that he<sub>i</sub> was voted President.

Ellipsis between *de re* and *de se* is clearly bad for my informants (this contrasts with other attitude predicates). While the quantified sentence is not felicitous in the scenario above, it does seem to improve if one begins with: *So, John dreamed he was President. Bill dreamed he was President. Sam did too. How egomaniacal of them! Each of them dreamed that he was voted President, but at least Bill and Sam had the decency not dream it in the first person.* I do not know why this should be, and leave future research to settle if this is in fact a reliable judgment.<sup>40</sup>

## 1.4.6 Summing Up

Let me sum up where all of this has brought us. I began this section with a discussion of P&S's characterization of a constraint on interpretation in dream report sentences. I demonstrated that their characterization was too weak, and that the simpler statement that all *de se* anaphora must be *de re* free was in fact empirically correct. I then considered a centering-based analysis of these facts due to Hardt, and argued that while it derived the right generalization, it had numerous problems ruling out other behavior characteristic of scope-taking. Finally, based on a connection between

<sup>40</sup>A final, more troubling worry is this: as the system stands it should generalize regardless of the person features of the attitude holder; it seems highly unlikely that this is the case for languages showing anti-logophoric effects, since the general typological generalization is that 1st person logophors are absent from most languages, and hence one simply uses the 1st person pronoun, which presumably is generally interpreted *de se*. I leave this problem open.

Dahl's Puzzle obviation facts, I argued that an account in terms of local binding was the correct way to capture the *De Re* Blocking Effect. I then demonstrated that this constraint was operative more generally in Yoruba logophoric environments, suggesting that a link between the Koopman and Sportiche (1989) operator-theoretic approach to logophors in West-African languages and P&S's derivation of *de se* expressions was warranted. Finally, I considered the case of anti-logophoricity, and speculated that its source lies in the attitude predicate itself, which prevents a *de se* concept from being used for *de re* ascription. If this is correct, then we predict the appearance of selfless requirements in the absence of any obligatory *de se* anaphor that could compete with a pronoun. As I will show in Chapter 3, there is such a case: the Mandarin rationale clause head *qu* 'go', which forces everything its scope to be read *de re*.

## 1.5 Reflections on the theory

I began this chapter with the puzzle of *de se* belief, which motivated complicating how we conceive of the relation between a believer and what is believed. I then turned to *de se* ascriptions, which I have argued have two independent sources. The first is *de re* ascription via a SELF/AUTH description; in the final version of *de re* ascription I settled on, the description is not explicitly expressed, and hence is the result of a semantic process. I argued that P&S's Argument from Only showed that this semantic process is constrained pragmatically, in that the speaker may elect to remove salient concepts from the discourse. What he may not do, I argued, was remove the SELF concept, though I argued anti-logophoricity facts may suggest that attitude predicates themselves may do this.

The second method, which has a pedigree beginning with Chierchia, involves syntactic binding of a variable, and hence is sensitive to a syntactic condition: The *De Re* Blocking Effect. The system requires a stipulative feature on certain proforms [log], which indicates that the element must be bound by a logophoric operator. This is clearly an imperfection of the theory, but I do not see how to remove it; I leave it to future research. An additional stipulation of the theory is that there are no pro-forms that denote the AUTH or ADDR functors, and take an index as their complement. If this were possible, we would be able to derive *de se* readings of logophors without being subject to binding competition, since the binder would be an index. Note that in the case of temporal and modal binding (which I have lumped together in this discussion), there clearly do need to be such functors (or we should understand  $\lambda\langle x, y, w, t \rangle$  as  $\lambda x \lambda y \lambda w \lambda t$ ). Such elements may exist in natural language, but I know of no evidence for them, and it would be welcome to derive this.

Finally, it is worth considering a typological problem for this approach. As I noted above, Yoruba *òun* is used logophorically, but the 1st and 2nd person strong pronouns are not. In general, as Roncador (1988); Culy (1997) demonstrate, this is the cross-linguistically stable pattern (the only exception seems to be Gokana (Hyman and Comrie, 1981), and even then the 1st person logophor is reported as dispreferred). If we aim to reduce dream report *de se* expressions to this class, we must explain why these logophors do not obey this constraint. Schlenker (2003) derives this generalization from his theory of indexicality, which I will discuss in the following chapter. Briefly, his idea is that logophors are specified to refer to some index author but (in order to prevent

interpretation as the speaker) not the matrix index author. This derives that logophors could never exist with the 1st person. However, as I will show in Chapter 3, Japanese *zibun* and Mandarin *ziji* show exactly the range of facts of Yoruba *òun* and yet may be anteceded by all persons, suggesting that this generalization is not grammatical. I will leave this open as well.

In the following two chapters, I will lay out the case for a third route to *de se* via overwriting of a parameter used to fix the values of indexicals; in this sense, I will justify Sells' intuition that there are semantic mechanisms by which *de se* arises. I will demonstrate that this *de se* form neither obeys the *De Re Blocking Effect* nor allows the crossing dependencies that we have observed above for Yoruba. I will thus conclude that there are in fact three distinct routes to *de se* readings: one arising via the ordinary methods of *de re* ascription, one by binding by a syntactic operator, and a third by overwriting semantic parameters.

# Chapter 2

## On the shifting of indexicals

### 2.1 Introduction

The puzzle of indexical expressions has to do with two generalizations. On the one hand, there is a class of referential items that are dependent on the properties of an individual speech event: its participants and spatiotemporal coordinates. Thus, whereas a pronoun such as *she* can retain its reference throughout a discourse, across speech acts by different participants, *I* cannot. Let's call this the SPEECH DEPENDENCE GENERALIZATION.

- (183) SPEECH DEPENDENCE GENERALIZATION: 'I', 'you', 'yesterday' are dependent on the speech event.
- a. John: Did Mary<sub>i</sub> go to the party? She<sub>i</sub> said she wasn't sure.  
Bill: No, she<sub>i</sub> decided not to.
  - b. John: I<sub>i</sub> like chocolate. Do you<sub>j</sub>?  
Bill: No, I<sub>{j,\*i}</sub> don't.

On the other hand, there is a class of referential items that are not affected by intensional quantifiers, items that obey the INTENSIONAL INSENSITIVITY GENERALIZATION. Hence, underneath the attitude verb *say*, a definite description such as *the person speaking* can refer either to the attitude holder (John in the example below) or to utterance author (*say, me*). The pronoun *I* is not similarly chimerical: even within the scope of an attitude verb, it may only refer to the utterance author.

- (184) INTENSIONAL INSENSITIVITY GENERALIZATION: 'I', 'you', 'yesterday' are referentially insensitive to intensional quantification.

S<sub>1</sub>: John says, "Pranav is bald."

S<sub>2</sub>: John says, "I am bald."

- a. John said that I am bald. [✓ S<sub>1</sub>, # S<sub>2</sub>]
- b. John said that the person speaking is bald. [✓ S<sub>1</sub>, ✓ S<sub>2</sub>]

The puzzle then is this: since at least Kaplan (1989) it has been common wisdom that the class of elements that obey the SPEECH DEPENDENCE GENERALIZATION also obey the INTENSIONAL INSENSITIVITY GENERALIZATION.

(185) KAPLAN'S POSTULATE: The elements that obey the SPEECH DEPENDENCE GENERALIZATION are the same as those that obey the INTENSIONAL INSENSITIVITY GENERALIZATION.

Let us call the elements that obey both of these generalizations *indexicals*. We thus have an identification procedure for whether a term is an indexical:

(186) INDEXICAL IDENTIFICATION PROCEDURE

For a term  $\tau$  in the object language,  $\tau$  is an indexical iff:

- a. SPEECH DEPENDENCY: its reference necessarily changes between speech acts, and
- b. INTENSIONAL INSENSITIVITY: its reference does not change under intensional quantification.

English items that are said to satisfy the INDEXICAL IDENTIFICATION PROCEDURE are:

(187) Putative English Indexicals

- a. PERSON: *I, we, you<sub>sg</sub>, you<sub>pl</sub>*
- b. TEMPORAL: *now, today, yesterday, tomorrow, next n, last n*
- c. LOCATIVE: *here*

The satisfaction of SPEECH DEPENDENCY is fairly easy to establish for the PERSON, TEMPORAL, and LOCATIVE elements in (187) – simply consider two scenarios that differ in all participants and spatiotemporal coordinates:

(188)  $S_1$ : John is talking to Mary on 11/8/1848 at 5 p.m. in Wismar, Germany

$S_2$ : Mary is talking to John on 7/26/1925 at 8 a.m. in Bad Kleinen, Germany

- a. My mother came here last night.
- b. In  $S_1$ : [my mother]=John's mother; [here]=Wismar; [last night]=the night of 11/7/1848
- c. In  $S_2$ : [my mother]=Mary's mother; [here]=Bad Kleinen; [last night]=the night of 7/25/1925

What about INTENSIONAL INSENSITIVITY? None of the putative indexicals in (187) change their reference when embedded under *say*, the poster child intensional context from (184) – thus the rigidity of the indexicals in the following example:<sup>1</sup>

(189) Mary on 7/26/1925 in Bad Kleinen: John said on 11/18/1848 in Wismar that my mother came here last century.

[my mother] = Mary's mother; [here]=Bad Kleinen; [last century]= the temporal interval 1800-99.

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<sup>1</sup>The above experiment may be conducted with the whole host of attitude verbs (e.g., think, believe, expect, etc.).

Thus, to summarize, the examples in (187) do seem to obey both the SPEECH DEPENDENCE GENERALIZATION and the INTENSIONAL INSENSITIVITY GENERALIZATION, suggesting that KAPLAN'S POSTULATE is on the right track. As we will see shortly, Kaplan himself sought to explain this result via a two-dimensional approach to the reference of natural language terms: indexicals are rigidly specified once the *character* of a sentence is applied to the utterance *context*, before the *content* is derived.

And yet, the conclusion of KAPLAN'S POSTULATE should not be made too hastily. As pointed out by Schlenker (1999) (and indicated in the earlier fieldwork of Hyman (1979) on Aghem and Speas (1999) on Navajo), there are languages where elements satisfying SPEECH DEPENDENCE GENERALIZATION are sensitive to intensional operators. Schlenker, for instance, considers the following example from Amharic:<sup>2</sup>

- (190) John jǝǝgna n-ññ                      yil-all      Amharic  
        John hero   COP.PRES-1s says-3sm  
        'John says that {I am, he is} a hero.' (Schlenker, 2003, p.68, ex. 53)

Thus, the Amharic counterpart of English *I* can behave exactly like the definite description in (184b). Following Schlenker, I will call such cases where the reference of embedded indexical is determined by the context of the reported speech "indexical shift."

The ostensible subject of this chapter is to try to square Kaplan's successful treatment of indexicality with the putative counterexamples of indexical shift. However, crucial to our story will be Schlenker (1999)'s observation that shifted indexicals must be read *de se*, and thus we will be able to use the phenomenon of indexical shift to shine a light onto how *de se* items operate generally.

Here, then, is an outline of how these two stories will develop. In order to setup the problem of indexical shift, I will first present Kaplan's account for the SPEECH DEPENDENCE GENERALIZATION and INTENSIONAL INSENSITIVITY GENERALIZATION within the double-indexing system of Kaplan's *Logic of Demonstratives*. The section following this setup will outline the empirical challenge shifting indexicals pose for Kaplan's proposal. In addition to summarizing the existing Amharic, Aghem, and Navajo data, I will present data from two additional "indexical-shifting" languages, Zazaki<sup>3</sup> and Slave (Rice, 1986)<sup>4</sup> (the latter will be drawn from (Rice, 1986)).

This preliminary data will suggest two responses that can preserve the cross-linguistic validity of KAPLAN'S POSTULATE: first, that indexical shift is a species of quotation (the Quotational Approach), and second, that indexical shift is the result of a pernicious homonymy of logophors and indexicals within a given language (the Ambiguity Approach). I will first take up the challenge of the quotational approach, and demonstrate in section (2.3.2) that shifting indexicals obey neither of the hallmarks of quotation: opacity to grammatical transformations/licensing conditions and the requirement that quotes faithfully reflect the speaker's own words.

Section (2.4) will then outline the two most influential accounts of indexical shift, the "pronoun-centric" view of Schlenker (2003) and the attitude verb binding approach of Stechow (2002), which

<sup>2</sup>Other recent putative instances of indexical shift come from Catalan Sign Language (Quer, 2005), and Ancient Greek (Bary and Maier, 2003). We will return to Catalan Sign Language in section (2.7.2).

<sup>3</sup>Zazaki, also known as Dimili, is an Indo-Iranian language spoken mostly in Turkey by 2-4 million ethnic Kurds.

<sup>4</sup>Slave is in Athabaskan language spoken in the Northwest Territories of Canada.

suffice to cover the facts in section (2.5). However, in the following section, I will demonstrate indexical shift is far more restricted than these theories would predict. Specifically, I will motivate two empirical constraints. The first constraint, clearly operative in Amharic, Slave, and Zazaki, is that all shiftable indexicals must SHIFT TOGETHER. The second constraint, which I will motivate based on Amharic and Zazaki data, is that once an indexical shifts, indexicals in another lower domain cannot “unshift” to depend on the higher shifting context. This constraint, which is a generalization of SHIFT TOGETHER, I call NO INTERVENING BINDER:

$$(191) \quad * \quad C_A [ \dots \text{modal } C_B \dots [ \text{ind}_1 \dots \text{ind}_2 ] ] \quad \text{NO INTERVENING BINDER}$$

Following Anand and Nevins (2004), I will propose that NO INTERVENING BINDER is a natural consequence once we acknowledge the cross-linguistic invalidity of KAPLAN’S POSTULATE and admit *context-shifting operators* of the sort Kaplan argued did not exist (here expressed in the double-indexed system of *Logic of Demonstratives*:

- (192) CONTEXT-SHIFTING OPERATORS
- a. Zazaki:  $[[\text{OP}_V[\alpha]]]^{c,i} = [[\alpha]]^{i,i}$
  - b. Slave:  $[[\text{OP}_{\text{AUTH}}[\alpha]]]^{<A_c, \dots>, i} = [[\alpha]]^{<A_i, \dots>, i}$

In light of NO INTERVENING BINDER, I will review the prospects of an Ambiguity Theory. I will argue that in addition to parsimony, the operator-shifting approach to indexical shift also correctly predicts that shifted indexicals do not obey the *De Re* Blocking Effect, which I argued in the last chapter constrains the LF for logophoric pronouns. I will conclude that the operator-theoretic approach to indexical shift is superior as a model for indexical shift. In the concluding section, I will raise some questions for the empirical scope of the present proposal based on Catalan Sign Language (Quer, 2005) and Slave (Rice, 1986).

## 2.2 The Kaplanian view of indexicality

### 2.2.1 Context and Content

I will begin with an intuitive observation. Consider the sentence *I am talking to you*. uttered in two different scenarios.

- (193)  $S_1$ : John is talking to Mary on 11/8/1848 at 5 p.m. in Wismar, Germany  
 $S_2$ : Mary is talking to John on 7/26/1925 at 8 a.m. in Bad Kleinen, Germany
- a. I am talking to you.
  - b. In  $S_1$ :  $[[I]]$ =John
  - c. In  $S_2$ :  $[[I]]$ =Mary

On the one hand, (193a) *differs* in meaning between the two scenarios, as the reference of *I* and *you* changes. However, note that the reference of *I* across the two utterances is predictably



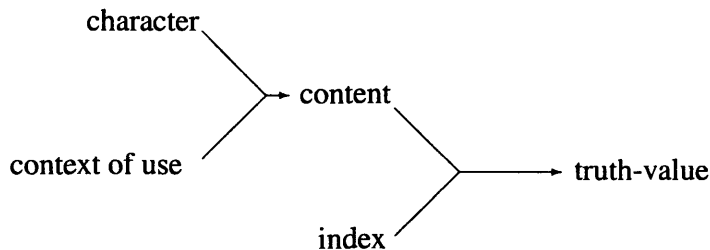
expressible as *the speaker of the utterance*. In this sense, (193a) has some constancy of meaning across the two utterances: given the utterance event (i.e., who is speaking, who is being spoken to, etc.), the sentence is unambiguous.<sup>5</sup>

Kaplan (1989) argues that these two conflicting judgments (in one sense the two utterances differ in meaning, in another they are the same sentence) diagnose the presence of two different components of interpretation. Consider first the difference in meaning. It is truth-conditional, since (193a) is true either only for John (in  $S_1$ ) or for Mary (in  $S_2$ ). Kaplan dubs this meaning on which the utterances differ *content*, identifying sentential content with propositional meaning.

Now let's consider the constancy of meaning. As I noted, the feeling of constancy arises because the reference of *I* is expressible as a function of the utterance, or at least some property of the utterance, namely, who is speaking. The same goes for *you*, which picks out who is being spoken to, and so on for all the indexical elements in (187). Kaplan proposes that what these items show sensitivity to is the *context* of the utterance, the second interpretative component of semantic evaluation, and dubs the context-sensitive meaning of a term  $\alpha$  the *character* of  $\alpha$ . Indexicals are special, he notes, in that their reference is solely determined by their characters.<sup>6</sup>

Thus, under Kaplan's theory, the truth of sentences is doubly-relativized, once to the context and once to the "circumstances of evaluation." His mechanism can be pictorially represented as follows:

(194) KAPLAN'S MODEL



I would like to sketch a formalism of this in the spirit of Kaplan's intensional *Logic of Demonstratives*. If *content* is propositional, then given the discussion of *de se* expressions in Chapter 1, it is a set of indices, or tuples of the form  $\langle individual, individual, time, world \rangle$ . We may thus relativized our interpretation function to the *index of evaluation*:

(195) INTENSIONAL FUNCTION APPLICATION

If  $\alpha$  is a branching node and  $\{\beta, \gamma\}$  the set of its daughters, then, for any index  $i$ , and assignment  $g$ : if  $[[\beta]]^{i,g}$  is a function whose domain contains  $[[\gamma]]_c^g$ , then  $[[\alpha]]^{i,g} = [[\beta]]^{i,g}([[\gamma]]_c^g)$ .

INTENSIONALITY CONVENTION: At the root, let  $i = \langle speaker*, hearer*, t*, loc*, w* \rangle$ .

What of the context? Let us, following Kaplan, assume it is likewise an ordered tuple of the same type:  $\langle individual, individual, time, location, world \rangle$ .

<sup>5</sup>Though see Lewis(1980) for skepticism.

<sup>6</sup>Strictly speaking, this applies only to what Kaplan terms 'pure' indexicals (those listed in (187). Demonstratives, which he also classes with indexicals, depend on a demonstration. The status of demonstratives as indexicals is hotly debated; see REFS.

(196) CONTEXTUALIZED INTENSIONAL FUNCTION APPLICATION

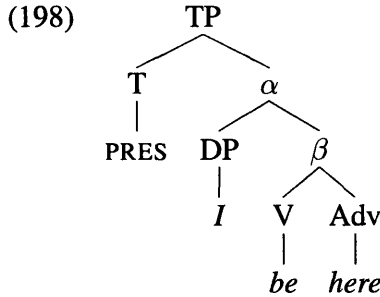
If  $\alpha$  is a branching node and  $\{\beta, \gamma\}$  the set of its daughters, then, for any context  $c$ , index  $i$ , and assignment  $g$ : if  $[[\beta]]^{c,i,g}$  is a function whose domain contains  $[[\gamma]]_c^{c,g}$ , then  $[[\alpha]]^{c,i,g} = [[\beta]]^{c,i,g}([[ \gamma ]]_c^{c,g})$ .

INTENSIONALITY CONVENTION: At the root, let  $i = c = \langle speaker^*, hearer^*, t^*, w^* \rangle$ .

Thus, the denotations of indexicals are as follows:<sup>7</sup>

- (197) a.  $[[I]]^{c,i,g} = AUTH(c)$ .  
 b.  $[[you]]^{c,i,g} = ADDR(c)$ .  
 c.  $[[here]]^{c,i,g} = LOC(c)$ .  
 d.  $[[today]]^{c,i,g} = \lambda P_{\kappa t}. P(i[TIME(i)/TIME(i) \cup DAY(TIME(c))]) = 1$ .<sup>8</sup>

As promised, the denotations of indexicals are determined solely by the value of the context, and hence they are *rigid designators* in the sense of Kripke (1972): they have constant intensions.<sup>9</sup> I will quickly run through the system for the sentence *I am here*. For simplification, I will assume that the copula *be* selects for a locative adverb, and is thus transitive.



And here are the lexical entries:

- (199) a.  $[[here]]^{c,i} = LOC(c)$ .  
 b.  $[[I]]^{c,i} = AUTH(c)$ .  
 c.  $[[PRES]]^{c,i} = \lambda P_{\kappa t} P(i[TIMEi/TIMEc]) = 1$ .<sup>10</sup>  
 d.  $[[be]]^{c,i} = \lambda x_e \lambda y_e. y$  is located at  $x$  in  $WORLD(i)$  at  $TIME(i)$ .

Thus the following derivation:

- (200) a.  $[[\beta]]^{c,i} = \lambda y. y$  is located at  $LOC(i)$  in  $WORLD(i)$  at  $TIME(i)$ .  
 b.  $[[\alpha]]^{c,i} = [[\beta]]^{c,i}([[I]]^{c,i}) = AUTH(c)$  is located at  $LOC(c)$  in  $WORLD(i)$  at  $TIME(i)$ .

<sup>7</sup>Where  $i[a/b]$  picks out the tuple substituting  $b$  for  $a$ .

<sup>8</sup>Where  $DAY(t)$  refers to the the conventional calendric day containing  $t$ .

<sup>9</sup>According to Kaplan (1989), this is what Kripke termed *strong rigid designator*, whereas *rigid designator* applied to the class of items which have constant intensions where they are defined. Given Kaplan's view of indexicals as directly referential (discussed below), that he wants them to be strongly rigid is not surprising.

<sup>10</sup>This denotation renders the present tense in some sense indexical; "in some sense" because strictly speaking it is a functor and thus does not have constant value across all indices.

- c.  $[\alpha]^{c,i} = \text{AUTH}(c)$  is located at  $\text{LOC}(c)\text{inWORLD}(i)\text{atTIME}(i)$ .  
d.  $[\text{TP}]^{c,i} = [\text{PRES}]^{c,i}([\alpha]^{c,i})=1$  iff  $\text{AUTH}(c)$  is located at  $\text{LOC}(c)\text{inWORLD}(i)\text{atTIME}(c)$ .

The denotation of (198) is thus a contingent proposition. Note, however, that by our INTENSIONALITY CONVENTION, it will be true in every context and thus an *a priori* truth. In contrast, the denotations of, for instance, definite descriptions are not rigidly designating (due to the fact that their restrictors are evaluated with respect to the index):

- (201) a.  $[\text{the}]^{c,i} = \lambda f_{e,t} : \exists! x f(x) = 1. \iota x [f(x) = 1]$  (Heim and Kratzer, 1998)  
b.  $[\text{speaker}]^{c,i} = \lambda x_e. x$  is a speaker in  $\text{WORLD}(i)$ .  
c.  $[[\text{the speaker}]]^{c,i} = \iota x [x$  is a speaker in  $\text{WORLD}(i)$ .]

In extensional contexts (in particular, non-world shifters), *the speaker* could thus (technically) refer to the utterance author (abstracting away from issues related to uniqueness in the definite description).<sup>11</sup> However, under an attitude verb (given the semantics from Chapter 1), there will be a contrast in reference (we assume that the complementizer is vacuous below):

- (202) a.  $[\text{believe}]^{c,i} = \lambda P_{\kappa t} \forall i' Ri [P(i') = 1]$ .  
b.  $[\text{believe} [\text{that I am here}]]^{c,i} = 1$  iff  $\forall i' Ri \text{AUTH}(c)$  is located at  $\text{LOC}(c)\text{inWORLD}(i')\text{atTIME}(c)$ ..  
c.  $[\text{believe} [\text{that the speaker is here}]]^{c,i} = 1$  iff  $\forall i' Ri \iota x [x$  is a speaker in  $\text{WORLD}(i')$  is located at  $\text{LOC}(c)\text{inWORLD}(i')\text{atTIME}(c)$ ..

Thus, we derive the INTENSIONAL INSENSITIVITY GENERALIZATION.

Now, a reasonable objection at this point is that the system is needlessly redundant, given that (by the INTENSIONALITY CONVENTION) we now have two elements that at matrix level agree on all parameters. One might, for instance (Scott, 1970; Thomason, 1974; Lewis, 1970), simply try to do it all with the index (such that, e.g.  $[\text{I}]^{i,g} = \text{AUTH}(i)$ ). But this won't do, since the index is shiftable by a variety of modal and temporal operators, while the indexicals are not. Consider, for instance, temporal operators such as the FUT morpheme:

- (203)  $[\text{FUT}]^{i,g} = \lambda P_{\kappa t}. \exists t' > \text{TIME}(i) [P(i[\text{TIME}i/t]) = 1]$ .

As Kamp (1971) and Vlach (1973) observe, underneath the future the denotation of *now* does not shift along with the temporal index of the matrix predicate.

- (204) One day all persons now alive will be dead. (Kamp, 1971)

We can replicate this pattern with other operators, including the attitude verbs considered in Chapter 1:

- (205) a. John<sub>i</sub> wanted PRO<sub>i</sub> to like me<sub>\*i</sub>. *de se* interpretation  
b. John told Bill<sub>i</sub> PRO<sub>i</sub> to leave your<sub>\*i</sub> house. *de te* interpretation

<sup>11</sup>Note that all non-indexicals (i.e., 3rd person pronouns) are never used where an indexical can be; Schlenker (2003) suggests that indexical person features are thus best analyzed as presuppositions, and that this dispreference arises due to a principle of MAXIMIZE PRESUPPOSITION (cf. (Heim, 1991)). I will return to this issue later.

Recall that our analysis for *want* and *tell* involved quantification over indices where the speaker and addressee coordinates picked out *de se* and *de te* centers; were *I* and *you* to track these coordinates of the index, they should shift.<sup>12</sup> That they do not suggests, as with the temporal operator above, that a singly-indexed theory is insufficiently expressive.<sup>13</sup>

## 2.2.2 Direct Reference

The doubly-indexed theory above immediately accounts for the SPEECH DEPENDENCE GENERALIZATION by encoding information from the speech event in a parameter of evaluation. How does it account for the INTENSIONAL INSENSITIVITY GENERALIZATION? Recall that when we contextualized IFA in (196), we continued to abstract over only the index, thus ensuring that the context and the elements dependent on it preserved reference. In essence, we have derived the INTENSIONAL INSENSITIVITY GENERALIZATION by rule gap: the semantic system simply has no rule which abstracts over the context.

But, of course, it could. As Kaplan points out himself (and, thereafter, (Israel and P., 1996; Schlenker, 1999)) such operators could be constructed within the logic of double indexing. Here is one: Stalnaker's famous diagonalization operator (Stalnaker, 1978), which overwrites the context with the index.<sup>14</sup>

$$(206) \quad [\text{OP}_{diag}]^{c,i} = \lambda\chi_{\kappa\kappa t} \cdot \chi(i)(i).$$

Note that this function *would* in fact allow indexicals to shift underneath attitude predicates, violating INTENSIONAL INSENSITIVITY GENERALIZATION. In order to show this, we must add another compositional rule, since  $\text{OP}_{diag}$  takes *characters* as its complement:

### (207) MONSTROUS FUNCTION APPLICATION

If  $\alpha$  is a branching node and  $\{\beta, \gamma\}$  the set of its daughters, then, for any context  $c$ , index  $i$ , and assignment  $g$ : if  $[\beta]^{c,i,g}$  is a function whose domain contains  $[\gamma]^{c,g}$ , then  $[\alpha]^{c,i,g} = [\beta]^{c,i,g}(\lambda c' \lambda i'. [\gamma]^{c',i',g})$ .

Consider what happens to (198) underneath it, for instance:

<sup>12</sup>Indeed, our analysis predicts that (at least for the case of *tell*, *I* should also shift under a pure Index Theory.

<sup>13</sup>While I take these arguments to be decisive against a pure Index Theory, I am less convinced by Kaplan's argument from the contrast between the following pair:

- (vi) a. I am here now.
- b.  $\square$  I am here now. (i.e., It is necessarily the case that I am here now.)

Kaplan notes that when uttered by me on June 9th, 2006, (0a) should come out analytically true in a way that *Pranav Anand is in Cambridge on June 9th, 2006*. should not. But he notes that (0a) will be false in countless indices, namely, those which do not describe an utterance context, or *improper contexts*. So perhaps, he suggests, we should restrict indices to proper contexts. But then, he argues, (0b) would come out true – an unwelcome prediction. However, note that we need only a contextually-proper index *only* at matrix level, as provided by our INTENSIONALITY CONVENTION; the necessity modal need only quantify over worlds of evaluation, producing a contingent statement, as desired.

<sup>14</sup>Strictly speaking, Stalnaker takes propositions to be sets of worlds, not more complex objects, but then he has problems properly capturing *de se* attitude ascription.

- (208)  $[[OP_{diag} [I \text{ am here}]]]^{c,i} = [[OP_{diag}]^{c,i}(\lambda c' \lambda i'. [[I \text{ am here}]]^{c',i',g}) = [I \text{ am here}]^{i',i',g=AUTH(i')}$   
is at LOC( $i'$ ) in WORLD( $i'$ ) at TIME( $i'$ ).

Thus, underneath an attitude verb (which, by hypothesis will change the agent parameter of the index), indexicals will shift. What has gone wrong here? On the one hand, nothing: the empirical facts about English indexicals seem to teach us that there are no character-shifting operators in natural language. As I discussed at the outset of the dissertation, diagonalization might have a role to play pragmatically, since it corresponds to Lewis's property self-ascription, but it is not part of the compositional semantic process. Put another way: diagonalization is something that happens to *utterances* (or thoughts, if they are linguistic) within a discourse, but not something that *sentences* make use of.

Kaplan argues that the doubly-indexed theory simply stipulates this, masking a deeper fact about indexicals – they are *directly referential*:

- (209) **DIRECT REFERENCE PRINCIPLE [Kaplan's Principle 2]:** Indexicals, pure and demonstrative alike, are directly referential. (Kaplan, 1989, p. 492)
- (210) **Principle 2':** When what was said in using a pure indexical in a context  $c$  is to be evaluated with respect to a arbitrary circumstance, the relevant object is always the referent of the indexical with respect to the context  $c$ . (Kaplan, 1989, p. 500)

Let me expand on this a bit. One element of direct referentiality is that the rule of use that fixes the value of an indexical (e.g., *the speaker*) isn't part of the truth-conditional 'what is said'; it simply serves to fix on an object. This is what serves to separate indexicals from their intuitive definite descriptions. As we have seen, this is cached out in Kaplan's system by means of a separate parameter of evaluation; but such a move runs the risk that this parameter can in fact be altered in the course of compositional interpretation.

This motivates the second element of direct referentiality – that propositions containing directly referential terms are singular, in that they contain the indexical referent as a constituent (for this reason, Kaplan endorses a structured meanings approach to propositions, although he does not in fact make use of one for his logic). Skimming the surface of the Frege-Russell tussle regarding the make-up of propositions, we may simply say that this translates as the requirement that the content of indexicals be an individual and not a property (the content of definite descriptions). While this *is* what the double-indexed system derives, note that its motivation is somewhat dubious. From the fact that  $I$  does not have the content of *the speaker* one cannot simply conclude that it has no property content (though the converse seems sound enough). Indeed, Nunberg (1993) provides many examples suggesting that indexicals can indeed introduce properties into the truth-conditions of sentence. Consider, for instance, the following:

- (211) I am traditionally allowed to order whatever I like for my last meal. (Nunberg, 1993, ex. 32)
- (212) Tomorrow is always the biggest party night of the year. (Nunberg, 1993, ex. 59)

In both of these cases, what the indexical contributes is a property, expressibly by a suitable definite description (e.g., *the condemned prisoner*, *the Saturday before classes begin*). These look

an awful lot like *de re* ascription as presented in Chapter 1, but note that there is a contrast between indexicals and names or referential definites:

(213) ?? Saturday, September 14, 1991, is always the biggest party night of the year. (Nunberg, 1993, ex. 60)

The contrast is, admittedly, rather delicate; other names seem perfect to me:

(214) The Founders invested {me, George Bush} with sole responsibility for appointing Supreme Court justices. (Nunberg, 1993, ex.36, 39)

In point of fact, a contrast is not really important for my purposes here. I simply want to point out that there is fairly good evidence to suggest that the content of indexicals is not simply an individual. However, abandoning this thesis of direct referentiality seems to allow us to creep back into the possibility of indexical content not remaining fixed for an utterance, and this is, of course, impossible.<sup>15</sup> In the remainder of this chapter, I'd like to argue that there are good arguments to knock out this remaining leg for direct referentiality. I will argue that indexical shift is possible precisely *because* there is a semantic parameter that can be quantified over in the semantics.

## 2.3 Indexical Shifting

Let me summarize where things stand with our system. On the one hand, the doubly-indexed framing of the *Logic of Demonstratives* introduced above accurately captures both SPEECH DEPENDENCE GENERALIZATION and INTENSIONAL INSENSITIVITY GENERALIZATION. However, we noted that the latter comes at the cost of positing merely a gap in the range of natural language operators. This is a result of our ignoring the DIRECT REFERENCE PRINCIPLE, which seems to be better captured within a structured proposition framework. However, we then noted, following Stalnaker (1981) and Haas-Spohn (1994) that diagonal functions express the subjective meaning of propositions. Still, it was acknowledged that Kaplan's stance that the *semantics* of natural languages lack context-shifting operators themselves may still be maintained, as long as we accept with Stalnaker (1981) that diagonalization is a pragmatic procedure that operates on *utterances*.

In the following sections, I will lay out the case for context-shifters in the semantics of natural language itself. I will argue in line with Schlenker (2003, 1999) that shifting indexicals underneath attitude verbs diagnose the presence of context operators. However, unlike him I will argue that attitude verbs that can quantify over the context do not always, and thus that a separation between context (host to the coordinates indexicals are dependent on) and index (material quantified over by intensional operators) is more empirically promising than Schlenker's theory for capturing indexical shift. I will, however, also lay out an option in line with the verbal quantifier approach of Stechow (2002) which, suitably enriched, may be able to cover all of the facts.

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<sup>15</sup>I suspect that this worry is behind the solution to Nunberg's examples given by Recanati (1993). Recanati argues that these property readings are higher-order implicatures, while the literal meaning does, in fact, concern the individual referent for the indexical. As Nunberg and Recanati both note, such a story cannot explain the party-day example above.

### 2.3.1 Some Initial Facts

Recall that the argument for discounting a semantic  $OP_{diag}$  was empirical: indexicals in English obey INTENSIONAL INSENSITIVITY GENERALIZATION. However, as mentioned at the outset of this dissertation, this generalization is not true cross-linguistically. I will begin with some representative data from Aghem (Hyman, 1979), Navajo (Speas, 1999), and Amharic (Leslau, 1995; Schlenker, 1999).

Hyman (1979) notes that in Aghem [Bantu], the personal pronouns and  $N/m\zeta$  ‘I’ and  $w\delta$  ‘you’ can shift underneath a verb of saying:

- (215) a. wizin ’ve ndzE a win ni’a e nge ligha wo  
 woman that said to him that LOG much like you  
 ‘The woman said to him, “I like you a lot.”’ (Hyman, 1979, p.51=ex. 14a)
- b. soog $\zeta$ ? ve me nia wo ligha mu $\zeta$  m? wo mban l $\zeta$  wi ba?tom  
 soldier that (said) that you like me and you yet are wife chief  
 ‘The soldier said, “You like me, and yet you are the wife of the chief.”’ (Hyman, 1979, p.51=ex. 14b)

Note that this shift is not obligatory:

- (216) wizin m $\zeta$  dzE nia m m $\zeta$  zi bE ki win  
 woman the said that I MU ZI fufu KI his  
 ‘The woman said that I ate his fufu.’

Similar shifting can occur in Navajo for the 1st and 2nd person pronouns as well (Schauber, 1979):<sup>16</sup>

- (217) a. Jáan chid’i naháLnii’ n’i  
 John car 3sgO.PERF.1sgS.buy 3.say  
 ‘John says, “I bought a car.”’  
 ‘John says, “Pranav bought a car.”’
- b. Jáan Mary chid’i nahid’i’i:nih yiLn’i  
 John Mary card 3sgO.IMPF.2sgS.buy 2sgIO.2sgS.say  
 ‘John told Mary, “You buy a car.”’  
 ‘John told Mary, “Pranav should buy a car.”’

Finally, Leslau (1995) reports that 1st and 2nd person indexicals may also shift in Amharic<sup>17</sup> underneath a verb of saying (the example is from above):<sup>18</sup>

<sup>16</sup>This appears limited to at most three verbs: say, think, and want. The latter two show idiolectal variation: while Schauber (1979) presents data showing that they shift, Speas (1999) notes that her informants only allow shifting under say.

<sup>17</sup>In what follows, when Amharic data is not cited, it refers to personal fieldwork with 15 speakers.

<sup>18</sup>Again, this appears limited to the verb of saying *alə*:

- (218) a. John jiəgna n-ññ           yil-all  
 John hero COP.PRES-1s says-3sm  
 ‘John says that {I am, he is} a hero.’ (Schlenker, 2003, p.68, ex. 53)
- b. min amt’-a           ind-al-ə-ññ           al-səmma-hu-mm  
 what bring.IMPER-2m COMP-say.PF-3M-1SO NEG-hear.PF-1S-NEG  
 I didnt hear what he told me to bring. (lit. I didn’t hear that he said to me bring what.)  
 (Leslau, 1995, p. 779)

In summary, we seem to have the following possibilities: in all three languages (Aghem, Navajo, and Amharic) both the 1st person and 2nd person indexicals can shift reference when embedded under ‘say’ (and under ‘think’ and ‘want’ for Schaubert’s Navajo informants). On the face of it, this seems to violate the INTENSIONAL INSENSITIVITY GENERALIZATION, and thus

- 
- (vii) John jiəgna n-ññ           yiSəll ig-all  
 John hero COP.PRES-1O think.IMPERF-3sm  
 ‘John thinks that {I am, \*he is} a hero.’

However, it is also possible to use gerundive forms of the verb *belo* ‘saying’ in conjunct with other intensional verbs to induce indexical shift.

- (viii) John jiəgna n-ññ           bilo           y-amn-allə  
 John hero COP.PRES-1O saying-3s 3ms-believe-be.3sm  
 ‘John believes that he is hero.’ (lit. ‘John believes saying I am a hero.’)

Importantly, examples with *belo* do not implicate that the attitude holder actually *vocalized* anything corresponding to the embedded proposition. However, as Leslau (1995) reports, *alu* can be used with non-human subjects, including animals, and, more spectacularly, inanimates:

- (ix) in Cət-u al-ikkəffət           alə  
 wood-the 1s.NEG.IMPERF-dry say.mkperf.3sm  
 ‘The would wouldn’t dry.’ (lit. The wood “I-will-not-dry” said.) (Leslau, 1995, p. 782)

As Marta Abrusan (p.c.) points out to me, such uses are also possible in English:

- (x) a. The book just told me that I should pick it up!  
 b. This window says that it won’t budge an inch. [Upon an unsuccessful attempt to open it.]

The latter example above reflects a generalization from Leslau (1995): verbs of saying with inanimate subjects are acceptable to report an inability to do something to the subject. However, note that this is not a necessary context for inanimate subjects, either in English or Amharic – all one needs is a more explicit context:

- (xi) S: We are attending an open house at a questionable property. The two grimy living room windows are looking particularly bad. After a long moment of deliberation, I walk over and choose the left one. You look over at me quizzically. I respond:
- a. I chose this window because it said it would open without complaint.
- b. yih məskot tagilu-ññ           sil-ay-ili-mm           mərr ət-hu  
 this window fight.IMPER.2pl-1sO because-3sm-say-NEG.IMPERF choose.PERF-1s  
 ‘I chose this window because it doesn’t say, “Fight me!”’

Thus, I believe that the peculiar distribution of *alə* is part of a more general mystery: the coercion of non-sentient entities into sentient ones. Whether this is a linguistic problem *per se* or not I leave for future research.



Kaplan's Prohibition Against Monsters. There are two natural reactions to this data. The first is that they are instances of direct quotation, which Kaplan explicitly separated from his system as a metalinguistic tool that mentions linguistic expressions instead of using them. The second is that these pronouns are *ambiguous* between true indexical meanings and something else (possibly, logophoric pronouns). We will consider each of these possibilities in turn.

Before turning to these avenues for analysis, let me introduce two additional languages whose shifting behavior we will be considering. The first comes from Zazaki<sup>19</sup>, in which all indexical expressions are shiftable underneath 'say.'<sup>20</sup>

- (219) a. H<sub>esen</sub><sub>j</sub> (m<sub>i</sub><sub>k</sub>-ra) va ke e<sub>z</sub><sub>j/k</sub> d<sub>e</sub>wletia  
 Hes<sub>en</sub>.OBL (I.OBL-to) said that I rich.be-PRES  
 'Hesen said that {I am, Hesen is} rich.' (Anand and Nevins, 2004)
- b. H<sub>esen</sub> (Ali<sub>k</sub>-ra) va ke t<sub>i</sub><sub>ADDR(c\*)/k</sub> d<sub>e</sub>wletia  
 Hes<sub>en</sub>.OBL (Ali.OBL-to) said that you rich.be-PRES  
 'Hesen said that {Ali is, you are} rich.' (Anand and Nevins, 2004)
- c. Waxto ke ma Diyarbekir-de bime, H<sub>esen</sub><sub>i</sub> m<sub>i</sub>-ra va ke o<sub>i/j</sub> ita ame dina  
 When that we D.-at were, Hes<sub>en</sub>.OBL me-at said that he here came world  
 'When we were in Diyarbekir, H<sub>esen</sub><sub>i</sub> told me he<sub>i/j</sub> was born {here, in Diyarbekir}.'  
 (Anand and Nevins, 2004)
- d. Hefte nayeraraver, H<sub>esen</sub><sub>i</sub> m<sub>i</sub>-ra va ke o<sub>i/j</sub> v<sub>izeri</sub> Rojda paci ker<sub>d</sub>.  
 week ago, H.OBL me-at said that he yesterday Rojda kiss did  
 'A week ago, H<sub>esen</sub><sub>i</sub> told me that he<sub>i/j</sub> kissed Rojda {8 days ago, #yesterday}.' (Anand and Nevins, 2004)

Our final language of consideration will be Slave, which has four indexical shifting verbs. Slave too shows the possibility of 1st and 2nd indexical shift, only the possibilities are a bit more complicated than those considered above. First, the shifting attitude verbs separate into two classes on the basis of what shifts. Three verbs, *hadi* 'he says' (intr.), *yenjwε* 'he wants, he thinks' (intr.), *hudeli* 'he wants, he thinks' (trans.), shift only the 1st person, while the remaining verb, *eded* 'he tells, he asks' (trans.), shifts both 1st and 2nd person.

This behavior is exemplified in the following Slave sentences. In the first example, both embedded pronouns refer to the author and addressee in the embedded context, while in the second pair, only the embedded 1st person pronoun refers to the attitude holder.

<sup>19</sup>Cited data comes from four native speaker consultants and is the result of collaborative fieldwork with Andrew Nevins. When Zazaki examples are provided without citation it signifies personal fieldwork with ten additional speakers, all of whom have verified the cited data, unless otherwise noted.

<sup>20</sup>The possibility of shifting seems limited to *vano*. Other attitude verbs (e.g., believe, think, dream), including those of verbal discourse (e.g., hear, yell) do not allow *εz* to shift:

- (xii) H<sub>esen</sub><sub>j</sub> termine k<sub>eno</sub> ke e<sub>z</sub><sub>\*j/k</sub> newesha  
 Hes<sub>en</sub> believe does that I sick.be-PRES  
 'Hesen believes that {I, \*Hesen} is sick.' (Anand and Nevins, 2004)

(220) TELL: embedded 1ST and 2ND shift

[segha ráwqđ'í] séđđi yjlé  
[1.sg-for 2.sg-will-buy] 2.sg-tell-1.sg PAST

'You sg. told me to buy it for you.' (Rice, 1986, p. 51, ex. 18)

(221) INTRANS. WANT: embedded 1ST shifts, but 2ND does not

a. sú [leshuyie k'eguhw'e] yerinewe  
Q [spoon 1.sg-will-lick] 2.sg-want

'Do you [ADDR(c\*)] want to lick the spoon?' (Rice, 1986, p. 54, ex. 35)

b. denexare [wqję] yenjwe  
sister [2.sg-will-sing] 3.sg-want

'Sister wants you [ADDR(c\*)] to sing.' (Rice, 1986, p. 55, ex. 40)

The second respect in which the embedded predicates (and not the pronouns) determine the behavior of indexical shift is in terms of its optionality. One of the verbs, *hadi* 'he says' *obligatorily* shifts indexicals in its complement, in contrast to the other three verbs:

(222) a. WANT: optionally shifts indexicals in its complement

John [beya ráwoz'ie] yudeli  
John [1.sg-son 3.sg-will-hunt] 3.sg-want-4.sg

'John wants his son to go hunting.' (direct)

'John wants my son to go hunting.' (indirect) (Rice, 1986, p. 62, ex. 77)

b. SAY: obligatorily shifts indexicals in its complement

Simon [rásereyineht'u] hadi  
Simon [2.sg-hit-1.sg] 3.sg-say

'Simon said that you hit {him, \*me}.' (Rice, 1986, p.53, ex. 29)

To summarize this pattern, there are two sorts of outliers. The first is 'tell', which shifts both 1st and 2nd. The second is 'say' which shifts 1st obligatorily. The other two verbs 'want, think' shift 1st person optionally. The addition of Slave and Zazaki reveal the following typological picture:<sup>21</sup>

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<sup>21</sup>There are additional putative indexical shifting languages. Bary and Maier (2003) consider cases of shifting 1st person in Ancient Greek, and Zucchi (2004) and Quer (2005) discuss sign-language Role Shift (Loew, 1984; Meier, 1990; Padden, 1986, 1990; Shepard-Kegl, 1985) as a case of indexical shift:

(1) a. eipon erkesθai sun tois ippois ous ekomen  
3.pl.past come.inf.pres with the.pl.dat horses.pl.dat rel.pl.acc have.1.pl.pres

'They said they were coming with the horses they had.' (Bary and Maier, 2003, ex. 23)

b. Quer example

	LANGUAGE	WHAT SHIFTS	WHEN
	Aghem	1st & 2nd person	say
	Amharic	1st person & 2nd person	say
(223)	Navajo	1st & 2nd person	say (want, think)
	Slave	1st person	say (oblig.), want, think
	Slave	1st & 2nd person	tell
	Zazaki	all indexicals	say

My task in the remaining sections of this chapter will be to try to capture this cross-linguistic variation in a principled fashion. One highly suggestive fact, discovered by Schlenker (1999), is that shifted indexicals must be read *de se* in Amharic. Here is Schlenker's example for Amharic 1st person:

(224)  $S_1$ : John says, "I am a hero."

$S_2$ : John, who is a candidate in the election, is so drunk he doesn't remember who he is. He watches TV and sees a candidate he finds terrific, thinking that this guy must be a hero. This candidate happens to be John himself, though he doesn't realize it.

John jiəgna n-ññ            yil-all  
John hero COP.PRES-1s says-3sm

'John said that he was a hero.' [ $\checkmark S_1, \#S_2$ ] (Schlenker, 1999)

Similarly, one can construct examples for 2nd person in Amharic.

(225)  $S_1$ : John says to Bill, "You are a hero."

$S_2$ : John says to Bill, "I hear this guy Bill is a hero."

John jiəgna nə-h            yil-all  
John hero COP.PRES-2sm says-3sm

'John says that Bill is a hero.' [ $\checkmark S_1, \#S_2$ ]

The same generalization is true in Zazaki. First, a replication of the Amharic data:

(226)  $S_1$ : Heseni says, "I am sick today."

$S_2$ : Heseni, at the hospital for a checkup, happens to glance at the chart of a patient's blood work. Heseni, a doctor himself, sees that the patient is clearly sick, but the name is hard to read. He says to the nurse when she comes in, "This guy is really sick."

Heseni    va    kε    εz newəsha  
Hesen.OBL said that I be-sick-PRES

'Heseni said that he was sick.' [ $\checkmark S_1, \#S_2$ ]

(227)  $S_1$ : Heseni says to his patient Bill, “You are sick today.”

$S_2$ : Heseni is examining two twins, Ali and Ali-baba at the same time, though in different rooms. He walks into Ali’s room to talk to him about his results, and starts explaining the results, but then thinks that he’s actually in the wrong room, talking to Ali-baba. He apologizes, and just before leaving tells Ali, “Well, I shouldn’t have told you all that, but, in summary, Ali is sick.”

Heseni va Ali-ra ke tI newesha  
Hesen.OBL said Ali-to that you be-sick-PRES

‘Heseni said to Ali that he was sick.’ [ $\checkmark S_1, \#S_2$ ]

The same can be shown for shifted temporal and locative indexicals:

(228)  $S_1$ : Heseni says, “I will see Rojda tomorrow!”

$S_2$ : Heseni looks at the calendar and sees that Rojda is coming home on June 9th. Heseni thinks that it’s actually June 7th, and announces to everyone, “I will see Rojda in two days!”

(Reported on June 13th): Heseni va ke ez meSte Rojda vinena  
Hesen.OBL said that I tomorrow Rojda see-PROG

‘Heseni said that he would see Rojda the next day.’ [ $\checkmark S_1, \#S_2$ ]

(229)  $S_1$ : Pierre says in London, “It is pretty here.”

$S_2$ : Pierre is walking around London, which is drab and rather disappointing. He says, “I wish I were in Londres. Londres is pretty.”

waxto ke o London-de bime Pierri va ke o ita  
when that he London-at be-PAST Pierre.OBL said that it here be-pretty-PRES

‘When he was in London, Heseni said it is pretty there.’ [ $\checkmark S_1, \#S_2$ ]

In conclusion, both Amharic and Zazaki shifted indexicals must be read *de se*. This is an important fact that needs explaining. In the following section, I will consider one natural explanation – that indexical shift is an instance of quotation, which is *de se, de facto*.

### 2.3.2 Quotational Theories of Shifting

I will begin by acknowledging the obvious generalization that emerges when we examine the chart in (223): almost invariably the licensing predicate is a verb of saying. Given this, it is highly plausible that these are simply cases of direct discourse.<sup>22</sup>

I will show that simple-minded theories of quotation simply cannot capture the facts of indexical shift, since the clauses containing them show many symptoms of grammatical activity. We

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<sup>22</sup>Do not be fooled by the presence of complementizers! Many languages allow direct discourse complements with complementizers. For instance, Japanese allows embedded quotations (identifiable by embedded topic markers and sentence-final particles), as do Hindi and Persian (Schlenker, 1999):

will then consider the more nuanced approach of partial quotation. However, I will show that partial quotation is itself insufficient, given both the typological variation outlined above and the restrictions on indexical shift.

### Arguments Against Clausal Quotation

In order to discount that quotation is going on here, it is important to get a fix on what quotation *is*. I will begin with an old postulate about quotation:

(230) GRAMMATICAL OPACITY

Quotations form a closed domain with respect to syntactic and semantic operators.

The postulate of GRAMMATICAL OPACITY amounts essentially to the observation that quotations do not permit extraction, quantifying in, or grammatical licensing from outside of the quote.<sup>23</sup> First of all, this entails that *all* indexicals *obligatorily* shift inside quotations, as do demonstratives. But this is, of course, not true for Navajo and Amharic:

(231) a. kii yiskáago Kinlán í-góó deeshá n'í Navajo

Kii tomorrow Flagstaff-to 1.go say

'Kii said that he's going to Flagstaff {tomorrow, \*day after speaking}.' Speas (1999, ex. 11)

b. John læmin nəgə wəd-Addis Abəba ihedallə-hu alə Amharic

John why tomorrow to-Addis Ababa go.IMPERF-1sS say.PERF.3sm

'Why<sub>i</sub> did John say that {I am, he is} going to Addis Ababa {tomorrow, \*day after speaking} t<sub>i</sub>?'

(xiii) a. John-ne kahaa ki meN dilii jaunga  
John-ERG say-PERF.sgM COMP I Delhi go-FUT.sgM  
'John said, "I'm going to Delhi."

b. John-ne nahiin kahaa ki meN kahiin jaunga  
John-ERG NEG say-PERF.sgM COMP I Delhi go-FUT.sgM  
'John didn't say I'm going anywhere.'  
'\*John didn't say, "I'm going somewhere."

(xiv) a. goft (ke) xAham Amad  
say.PERF that I-FUT come-SUBJ  
'He said {he, I} will come.'

b. be Soma xabar dad ke koja xaham raft  
to you information gave that where aux-PUT-1s go  
'He told you where {I, \*he} was going.' (Schlenker, 1999, p. 179-80, fn. 17, ex. i-ii)

<sup>23</sup>It is important to note that this is distinct from claiming that quotations are simply names, as under the infamous Proper Name Theory (Quine, 1940; Tarski, 1933). Many defenses of the Proper Name Theory *start* from this observation – consider for instance Tarski: "Quotation-mark names may be treated like single words of a language, and thus like syntactically simple expressions." (Tarski, 1933, p. 159) Of course, were quotations truly internally unanalyzable proper names, "whose parts count for no more than serifs or symbols" (Quine, 1940, p. 26) the dual use partial quotations enjoy would not be possible.

In addition, this postulate entails that extraction should not be possible from a quotation:<sup>24</sup>

- (232) \* Who<sub>i</sub> did Hesen say, “t<sub>i</sub> kissed me”? island for extraction

However, clauses with shifted indexicals do allow extraction:

(233) a. EXTRACTION IN AMHARIC

- i. min amt'-a ind-al-ə-ññ al-sw  
 what bring.IMPER-2m COMP-say.PF-3M-1SO NEG-hear.PF-1S-NEG  
 mma-hu-mm

I didn't hear what he told me to bring. (lit. I didn't hear that he said to me bring what.) (Leslau, 1995, p. 779)

- ii. John jǝgna ləmin n-ññ yil-all  
 John hero why COP.PRES-1s says-3sm  
 'Why<sub>i</sub> does John say that {I am, he is} a hero t<sub>i</sub>?'

b. EXTRACTION IN NAVAJO

- Háadilá<sub>i</sub> Kii Mary t<sub>i</sub> d'in'ílnish yiLn'í  
 where.at Kill Mary t<sub>i</sub> 2sS.work 3sIO.3sS.say  
 'Where<sub>i</sub> did Kii tell Mary to work t<sub>i</sub>?' Speas (1999, ex. 8)

c. EXTRACTION IN SLAVE<sup>25</sup>

- i. judóné ri nurse Mary ghq beghárayudá sudeli  
 when PQM nurse Mary about-1.sg will-see-3.sg 3.sg-want-1.sg  
 'When does the nurse want to see again about Mary?'
- ii. Yeri Margaret segha wqshi néhdi  
 What Margaret 1.sg-to 2.sg-will-make 3.sg-told-2.sg  
 'What did Margaret tell you to make for her?'

d. EXTRACTION IN ZAZAKI

- i. çenεke [kε Hesen<sub>i</sub> va m<sub>i</sub> t paci kεrda] rindeka  
 girl that Hesen said I t kiss did pretty.be-PRES  
 'The girl that Hesen said {Hesen, I} kissed is pretty.' (Anand and Nevins, 2004)
- ii. Piyaa-o [kε Rojda<sub>i</sub> va kε m<sub>i</sub> t paci kεrd] Ali biyo  
 Person that Rojda said that I t kiss did Ali was  
 'Ali was the person that Rojda said {Rojda, I} kissed.' (Anand and Nevins, 2004)

<sup>24</sup>David Pesetsky (p.c.) reports that for him Right Node Raising is allowable out of quotations:

(xv) [?]John said, "I've already read e<sub>i</sub>," although though I'm sure he doesn't even know the titles of, any of the books on the syllabus. [Judgment from D. Pesetsky]

Other native speakers I have consulted agree that while this example is noticeably better than (232) (to widely varying degrees), it is still ungrammatical. I have no explanation for this fact.

<sup>25</sup>PQM stands for prominent question word, and marks that the *wh*-word has matrix scope.

In addition, elements within the shifted clause may be licensed by licensors in the matrix clause. Thus, for instance, note that the Aghem example above (repeated below) involves both a logophoric item (which is not licensed in matrix contexts) and a shifted 2nd person indexical.

- (234) wizin 've ndzE a win ni'a e nge ligha wo  
 woman that said to him that LOG much like you  
 'The woman said to him, "I like you a lot."' (Hyman, 1979, p.51=ex. 14a)

In addition, NPIs are licensed in shifted complements in Zazaki and Amharic, *contra* what one might expect if they are grammatically opaque. Thus, in English, NPIs within a quoted phrase are not licensable by licensors outside of the quotation.

- (235) \*Hesen didn't say, "I like anyone." no outside NPI licensor

Assuming this is a universal prohibition on quoted discourse, it can be used to test if clauses containing shifting indexicals are instances of direct quotation. Consider first the case of the Zazaki NPI *kes*, which is licensed in classic downward-entailing environments:

- (236) a. **Mi** kes paci \*(ne) kerd  
 I.ERG anyone kiss \*(not) did  
 'I did \*(not) kiss anyone.' (Anand and Nevins, 2004)  
 b. \*(tawa) kes-i va **kemi** Rojda paci kerd  
 Q anyone-OBL say COMP I.ERG kiss do-PERF  
 'Did anyone say that I kissed Rojda?' (Anand and Nevins, 2003)

As shown below, when *kes* is embedded in a complement clause with a shifted indexical, it is still licensable by a licensor in the superordinate clause:

- (237) a. Rojda ne va ke **mi** kes paci kerd  
 Rojda not said that I anyone kiss did  
 'Rojda didn't say that she kissed anyone.' (Anand and Nevins, 2004)  
 b. Tawa Alii va ke **mi** kes paci kerd  
 Q Ali.OBL said that I anyone kiss did  
 'Did Ali say that I kissed anyone?' OR  
 'Did Ali say that he kissed anyone?'

The same facts are replicable with the Amharic polarity item *lela* 'any other.' First note that this item is also licensed in downward-entailing environments.

- (238) a. lela t'iyyaq-e allə-h (\*?)  
 any-other question-pl have.pres-2mO  
 'Do you have any other questions?/\*You have some questions.'  
 b. lela t'iyyaq-e {yə-lləñ ñ-əmm, \*alləñ}  
 any-other question-pl NEG-have.pres-1O-NEG, have.pres-1O  
 'I (\*don't) have any other questions.'

As with Zazaki *kes*, *lela* can be licensed in a clause with a shifted indexical by a superordinate licenser, suggesting that such clauses are as well not instances of direct discourse.

- (239) a. John lela t'iyyaq-e alləñ al-ə(\*?)  
 John any-other question-pl have.pres-1O say.PERF-3sm  
 'Did John<sub>i</sub> say that {I he<sub>i</sub>} had any other questions?'
- b. John lela t'iyyaq-e alləñ {al-al-ə-mm, \*al-ə}  
 John any-other question-pl have.pres-1O {NEG-say.PERF-3sm-NEG, say.PERF-3sm}  
 'John (\*didn't) say that {I, he} had any other questions.'

In sum, I have provided evidence from extraction and NPI/logophoric licensing that suggests that embedded clause is not grammatically opaque, even where there is a shifted indexical. This serves, I believe, well enough to counter the reaction that shifted indexicals are simply the process of clausal quotation.

### Against Partial Quotation

Although the violations of GRAMMATICAL OPACITY have eliminated clausal quotation as a possible explanation for the cases of indexical shift above, it remains possible that what we are observing are cases of *mixed* quotation, whereby only selected phrases within a clause are quotative.<sup>26</sup> For instance, consider the following example from Recanati (2001):

- (240) James mistakenly thinks the philosopher McPherson is named 'Quine.' One of his friends, mockingly, reports the following.  
 The conference cannot start because 'Quine' has not finished his paper.

The above sentence is acceptable, even in a scenario where, for example, the actual Quine in fact *has* finished his paper. Why should this be? Intuitively, it is because James's friend is selectively quoting James's words for the reference of the name 'Quine.' The puzzle of mixed quotation is that once the reference of 'Quine' is fixed, it enters into the normal truth-conditions of the sentence.<sup>27</sup> Thus, what mixed quotations seem to suggest is that while the denotations of quotations are determined independently of the phrases that embed them, their denotations themselves enter into the normal compositional semantics, *contra* what one might conclude based on direct quota-

<sup>26</sup>The term mixed quotation is due to Capellen and Lepore (1997), the seminal paper on problems of the semantics of these chimeras.

<sup>27</sup>In this way, mixed quotation violates Kaplan (1989)'s assumption that quotes are universally meta-linguistic, and hence mentioned rather than used, since the semantic value of the quotation is in fact relevant to the truth-conditions of the utterance.



tion.<sup>28,29</sup> Indeed, Partee (1973) concludes that mixed quotation is not linguistically relevant, given that quotation is “not part of natural language.” While I agree that in *spoken* English these forms are relatively marked, mixed quotes are productively used in written language, and it remains possible that a dispreference for mixed quotation in spoken language is merely a linguistic convention of a community of speakers. Regardless, the existence of examples like (240) raises the possibility that indexical shift is simply the case of mixed quotation of indexical terms, and thus the possibility is worth the foray into this complex territory.

First, let us see how this might help solve the problems posed to direct discourse. The problem posed by these examples was that the entire clause was not quoted. However, it might be possible to analyze only the indexicals themselves as quoted. Hence, *Rojda didn't say 'I kissed anyone.* would be the structure submitted to interpretation, thus allowing transparency of the subordinate clause in general. So this might be a viable option.

The preceding discussion was predicated on there being one type of mixed quotation (an assumption that originates, presumably, with Capellen and Lepore (1997)). However, as Recanati (2001) observes, mixed quotations differ on how they alter the meaning of the quoted phrase. Some quotations appear to be benign, seemingly indicating only that a person expressed those very words. Examples of this sort include the following famous example from Davidson (1979):

(241) Quine said that quotation ‘has a certain anomolous feature.’ Davidson (1979)

This sentence entails the corresponding one without quotes:

(242) Quine said that quotation has a certain anomolous feature.

Recanati calls these examples where the sentence *sans* quotes is entailed by the one with quotes *cumulative*. Not all mixed quotations are cumulative; indeed, the paradigm Quine-McPherson example above is decidedly *non-cumulative*, given that it is utterable in a circumstance where the actual Quine has finished his paper. Non-cumulative examples further divide into two classes, which Recanati terms *conservative* and *non-conservative*. We have already seen one case of non-conservative non-cumulative mixed quotations, namely, the Quine-McPherson example that I pre-

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<sup>28</sup>Capellen and Lepore (1997) allege that the existence of mixed quotations is a serious problem for Proper Name theories of quotation, in which the quoted item is a singular term. However, this is only true to the extent that singular terms may not be of the appropriate type to compose with the embedding phrase. Thus Capellen and Lepore (1997) argue that under a Proper Name Theory the sentence *Alice said that life ‘is difficult to understand.’* is syntactically and semantically equivalent to *Alice said that life Manhattan.* But who is to say that Manhattan cannot mean *is difficult to understand?* I fully acknowledge the syntactic problems of such an analysis, however Capellan & Lepore’s demonstrative theory appears to be in the same murky waters.

<sup>29</sup>It is important to note, however, that mixed quotations may allow the appearance of quantificational elements and bound variables:

(xvi) John thinks a cat is sleeping ‘on every setee.’

(xvii) John met said that he met a man who liked to ‘trim his toenails with a razor.’

To the extent that we accept the quotational diacritics to accurately specify the boundaries of the quotation, these examples have consequences either for the postulate of GRAMMATICAL OPACITY or theories requiring movement and co-indexation to handle co-reference and quantification in the examples above. I will not consider this puzzle further here.

sented as the poster-child for mixed quotation. Another is the following from Capellen and Lepore (1997):

(243) My three-year-old son believes that I am a ‘philtosopher.’ (Capellen and Lepore, 1997)

Both this Philtosopher example and the Quine-McPherson example share the property that the denotation of the quoted term is itself, regardless of contextual factors, outside the language of the utterer. The Philtosopher example shows this quite vividly, given that there is no corresponding word in the utterer’s language; in the Quine-McPherson case, this is somewhat obscured by the fact that there is presumably a word Quine in the utterer’s language. Non-conservative quotations are thus, according to Recanati, translinguistic, in that the utterer is employing another person’s language. Such translinguistic cases contrast with examples like the following:

(244) Mr. Greenspan said he agreed with Labor Secretary R.B. Reich ‘on quite a lot of things’. Their accord on this issue, he said, has proved **‘quite a surprise to both of us’**. (Capellen and Lepore, 1997, p. 429 ex)

It is the second quotation, in bold, that is of interest here. Note, interestingly, the presence of the indexical *us*, whose 1st person element clearly denotes Greenspan. Recanati terms this example conservative because, while the sentence does not entail the unquoted forms (due to the presence of the indexical), he argues that the character of the quoted material is unchanged; it is rather that the context of evaluation has been altered to be that of Greenspan’s reported speech. If shifted indexicals are cases of partial quotation, then they are instances of conservative non-cumulative quotations.

However, shifted indexicals differ from mixed quotations in two crucial respects. First, there are constraints on indexical shift that are not observed in mixed quotation. As observed in (223), indexical shift is typologically variable: Aghem permits 2nd person shifting, Amharic and Navajo permit 1st and 2nd person-shifting, Slave permits either 1st person or 1st and 2nd shifting, depending on the verb, and Zazaki permits all indexicals to shift. On the other hand, in section (2.5.1), I will demonstrate that indexical shift (at least in Zazaki, Slave, and Amharic) obeys the principle of SHIFT TOGETHER: if a shiftable indexical shifts, all shiftable indexicals within the clause must shift with it. Thus, schematically, in all of the above languages the following sentence is argued to have only two (contextually implausible) readings:

(245) John said to Mary that [your husband] likes [your wife]. SHIFT TOGETHER scheme  
 ‘John said to Mary that your husband likes your wife.’  
 ‘John said to Mary that Mary’s husband likes Mary’s wife.’

Note that this applies only to cases of indexical shift. For instance, Zazaki and Amharic show no such constraint with translinguistic quotation, which appear to be as free as in English:

(246) a. domanI mI va kE Ez filtosofa ma Zazaki  
 son I-EZ say-PERF that I philtosopher be-PRES.m  
 ‘My son said that I am a philtosopher.’  
 ‘My son said that he is a philtosopher.’

- b. lij-e Bill filtosofa nə-h al-ə-w Amharic  
 son-my Bill philtosopher be.PRES-2sm say.PERF-3sm-3smO  
 ‘My son said to Bill that you are a philtosopher.’  
 ‘My son said to Bill that he is a philtosopher.’

Both the typological constraints and SHIFT TOGETHER are global constraints on an environment (the complement of the shifting predicate). However, insofar as quotation is a local process, confined to the quoted item itself, it is not clear how to capture these generalizations. In this sense, I believe quotational explanations of indexical shift are in something of a bind. On the one hand, the quotational operator must be local, lest the licensing and extraction diagnostics above become mysterious. On the other hand, if the operators are local, no explanation is available for why, for example, in Slave, it is licit to quote an embedded 2nd person underneath the verb ‘tell’ but not underneath ‘say’ or ‘want/think’, and why under ‘say’ quotation is required, nor why if one shiftable element is quoted, all other shiftable ones must be. In sum, quotational theories are too weak to account for indexical shift, which has global constraints that mixed quotation does not. I will revisit these localist problems when I discuss the theory of Schlenker (2003), which suffers from similar problems.

While indexical shift is more restricted than mixed quotation, it is also in one crucial respect more permissive, in the same way that indirect discourse in general differs from direct discourse: one has certain paraphrasing leeway in reports that direct quotation does not countenance. I will call this principle FAITHFUL REPORTING:

(247) FAITHFUL REPORTING

Quotations must faithfully report the exact words the person used.

FAITHFUL REPORTING captures the difference in felicity between the following direct and indirect reports:

(248) John says, “Mary kicked the bucket at 5:00 a.m.”

- a. John said that Mary died last night.
- b. # John said, “Mary died last night.”

The status of this condition for mixed quotations is less robust, at least in the literature on the topic. One tradition, following Davidson (1979), takes FAITHFUL REPORTING to be part of the semantic truth conditions of quotation *tout court* (e.g., Capellen and Lepore (1997); Potts (2005); Geurts and Maier (2005); Bittner (2001)). Others (e.g., Recanati (2001); Stainton (1999); Clark and Gerrig (1990); Sperber and Wilson (1981)) argue, however, that it is at best a pragmatic result of demonstration. Hence, some argue that paraphrase in cases of quotation is not forbidden, merely deviant: “ ‘Alice said that life ‘is difficult to understand’ isn’t false where Alice actually speaks the words ‘is tough to understand’. It may, of course, be infelicitous and misleading.” (Stainton, 1999, p. 274) Here I will not be concerned with the source of FAITHFUL REPORTING, merely that it exists (either as a feeling of deviance or truth-conditional violation); my concern is using it as a diagnostic.

Importantly, shifted indexicals do not have to obey FAITHFUL REPORTING. Consider the following example:

(249) Fatima is enamored with Hesen, the brother of her friend Rojda, though Fatima thinks they are merely friends.

S<sub>1</sub>: One day, Fatima asks about Hesen, and Rojda tells her, “Hesen is very rich.”

S<sub>2</sub>: Rojda tells her, “my brother Hesen is very rich.”

a. Rojda va kE braya mI dewletia  
Rojda say-PERF that brother I-EZ rich be

‘Rojda<sub>i</sub> said that her<sub>i</sub> brother was rich.’ [✓S<sub>1</sub>, ✓S<sub>2</sub>]

b. Fatima continued to pester her for some detail about Hesen, and finally Rojda was forced to confess how rich ‘my brother’ was. [# S<sub>1</sub>, ? S<sub>2</sub>]

While the mixed quote is admittedly not perfect in English even with the faithful report, I believe there is a strong contrast in appropriateness between the two scenarios. Such is not the case with the Zazaki shifted indexical. For completeness, I will present two additional examples, one using a temporal indexical and one using a locative indexical.

(250) Hesen is something of a publicity hound, prone to do shocking things for the sake of attention. Even still, there are boundaries he respects. For example, last year, Hesen and I were discussing the various stunts he had pulled. I suggested that the next thing he should do is kiss Fatima, the most beautiful girl in town, in public. Hesen said he’d do one better, “I will kiss Fatima at her wedding.” The wedding was the following day, a big elaborate affair. Hesen came and was quite the clown, but in the end, he decided not to go through with the plan.

Heseni va kE εz meSte Fatima pach keno  
Hesen.OBL said I tomorrow Fatima kiss do-FUT

‘Hesen said that he would kiss Fatima the following day.’

(251) Hesen and Ali have kidnapped Fatima, the heiress to a great fortune, and whisked her away to Paris for safe-keeping. However, Rojda’s mother Aisha, backed by her millions, is closing in on their location. Indeed, one day Ali comes back to the home base and tells Hesen, “Aisha is in Paris.”, a way of signalling to Hesen that Aisha is nearby without giving away their current location to Fatima. I (in Cambridge) can report this exchange as follows:

Ali va kE Aisha ita e  
Ali said that Aisha here be-PRES

‘Ali said that Aisha was in Paris.’

I thus conclude that shifted indexicals do not obey FAITHFUL REPORTING, in contrast to indexicals in mixed quotation in English.<sup>30</sup> I take this restriction on mixed quotation to reflect a different process from that of indexical shifting, and thus argue that we must look elsewhere to explain this apparent violation of KAPLAN’S POSTULATE.

<sup>30</sup>Recanati (1987) presents an interesting potential counterexample to this generalization.

(xviii) Peter mistakenly thinks Mary is Bill’s sister, which is a source of great amusement for Bill and John. One day, John sees Mary approaching them from a distance.

## 2.4 Two ways to shifting

Having dispatched a quotational solution to the problem of shiftable indexicals, I now turn to more viable options. In this section, I review two approaches, the pronoun-centric view of Schlenker (2003) and the attitude-verb binding approach of Stechow (2002), which can both deal with the facts presented above. Both agree, based on the evidence presented in Chapter 1, that attitude verbs quantify over elements of type  $\kappa$ , and thus that contexts and (attitude verb) indices are of the same type. They also agree that it is the hidden coordinates of these elements that are crucially relevant for licensing indexical shift. And, indeed, both approaches treat indexical shift as a species of quantificational binding, which can be schematized as follows:

(252)  $\overbrace{c\text{Hesen say } \lambda i \text{ I be-sick.}}^{\downarrow \uparrow}$

The question on which they diverge is where the action for indexical shift lies. Schlenker's account localizes it to the indexicals themselves, which specify whether they are shiftable or not. Thus, for his theory, it is a fact about English indexicals that prevents them from being bound by the index in the schematic above. Stechow's account, instead, links the cross-linguistic difference to the attitude verb, which may be specified as to whether it can or cannot bind indexical elements; on this account, English attitude verbs contrast with Amharic attitude verbs. This difference between the systems will become relevant when I evaluate their cross-linguistic predictive power. First, however, let me discuss the theories in a bit more depth.

### 2.4.1 A pronoun-centered theory

As hinted above, the system presented in Schlenker (2003) attempts to derive the cross-linguistic typology of indexical shift solely from the semantic features on pro-forms themselves. The core idea of the proposal is that pro-forms are represented as free variables embroidered with various morphosemantic features, which Schlenker takes to be presuppositions, based on the treatment of gender features in Cooper (1983); Heim and Kratzer (1998) (I here use Beaver (2001)'s  $\partial$  operator to express the presupposition the features introduce):

- (253) a.  $[[x_i + \text{feminine}(x_i)]^{c,g} = s(x_i) \wedge \partial(g(x_i) \text{ is female})$ .  
 b.  $[[x_i + \text{author}^*(x_i)]^{c,g} = s(x_i) \wedge \partial(g(x_i) \text{ is AUTH}(c))$ .  
 c.  $[[x_i + \text{author}(x_i, c_j)]^{c,g} = s(x_i) \wedge \partial(g(x_i) \text{ is AUTH}(c_j))$ .

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John to Bill: Look! 'Your sister' is coming over! (Recanati, 1987, p. 63 ex. ??)

Note that the above scenario is possible even if Bill and John acquired the information about Peter's belief state from, for instance, Peter telling John that "Bill's sister Mary is rather attractive." That is, Peter never need utter *your sister* and refer to Mary. However, it is important to note that here indexical reference is constant, suggesting that the context is not shifted, merely the evaluation index. In this sense, such examples are the inverses of *de re* puzzles: the individual concept is mentioned, while the *res* is unexpressed, and there is no apparent attitude verb present. I think that such examples are thus not instances of quotation but rather a species of Hob-Nob situations (Geach, 1967). See Van-Rooij (1997) and Edelberg (1992) for recent treatments of this problem.

The key difference between shiftable and non-shiftable indexicals lies in the differences between the two features [author\*] and [author]. As shown in (253b), [author\*] evaluates a variable's referential value with respect to the matrix context, and is thus indexical in the Kaplanian sense (i.e., obeys the INTENSIONAL INSENSITIVITY GENERALIZATION). This is thus the 1st person feature of English *I*, since embedding under attitude verbs will not change its referential value. The same is not true for the feature [author]. Note first the feature itself is evaluated with respect to a variable  $c_j$ , of type  $\kappa$ , and hence is bound relative to an attitude verb's quantification:

$$(254) \quad [\text{say}]^{c,g} = \lambda c_k \lambda p_{\kappa t} \lambda x. \forall c_i R_{\text{say}} \langle x, c_k \rangle [p(c_i) = 1].$$

This is nothing more than an extensional translation of the intensional denotation provided above. Let me consider concretely the example of *Hesen<sub>i</sub> said that I<sub>i</sub> am rich*, based on (219a). I will discount the information contributed by tense for explanatory ease; please see the appendix for a fuller derivation.

- (255) a. Hesen said that I am rich.  
 b.  $\lambda c_k$  Hesen [say  $c_k$ ] [ $\lambda c_i$  I <sub>$c_i$</sub>  be rich] pseudo-LF, modulo tense  
 c.  $\lambda c_k$  Hesen [say  $c_k$ ] [ $\lambda c_i$  [ $x_j$  +author( $x_j$   $c_i$ )] be rich] shifted indexical LF

Above, I have provided stages of rough approximations for the derivations of shifted example of (219a). As (255c) indicates, shifting arises for two reasons: first, the [author] feature of a shiftable *I* is underspecified for which speech context it is interpreted with respect to; second, that its free context variable is bound by  $c_i$ , the index introduced by the attitude verb and not by  $c_k$ , the index at the root node. If, instead, the [author] feature's context variable were bound by  $c_k$ , the indexical would get an unshifted interpretation, provided that the INTENSIONALITY CONVENTION is respected (i.e., that the root index is identified with the context).<sup>31</sup> This ambiguity of interpretation is compatible with the observation that indexical shift is apparently optional for this sentence. Before continuing, I should note one minor technical point: in Schlenker's system, shifted indexicals are not bound – rather the context variables inside them are bound by intensional quantifiers. However, it is important the reference of shifted indexicals co-varies with the attitudinal quantification. In order to accomplish this, Schlenker introduces a definite closure operator, that turns a free pronoun into a definite description:

$$(256) \quad [\iota]^{c,g} = \lambda f_{et} : \exists! x f(x). f(x)$$

Thus, for an [author] pronoun, this gives the following:

$$(257) \quad [\iota [x_i \text{ +author}(x_i, c_j)]]^{c,g} = (\lambda f_{et} : \exists! x f(x). f(x)) (g(i) \wedge \partial(g(x_i) \text{ is AUTH}(c_j))) = \text{the unique } x_e \text{ s.t. } x \text{ is AUTH}(c_j)$$

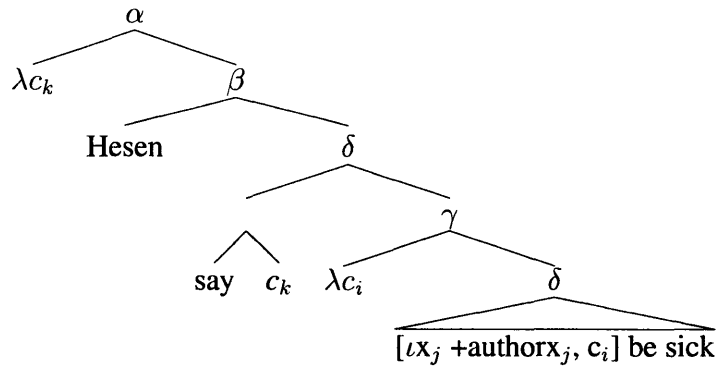
With the  $\iota$ -Closure operator in place, it is possible to give an interpretation to (255c), repeated here:

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<sup>31</sup>Note that under this particular implementation, even at the root,  $[[\text{author}^*(x_i)]]^{c,g} \neq [[\text{author}(x_i, c_j)]]^{c,g}$ , because it is possible that the speaker may intend to violate the INTENSIONALITY CONVENTION in certain cases.

(258)

shifted indexical LF



The derivation can be schematized as follows:

- (259) a.  $\llbracket \gamma \rrbracket^{g,c} = \lambda c_i. 1$  iff. the unique  $x = \text{AUTH}(c_i)$  is sick in  $\text{WORLD}(c_i)$ .  
 b.  $\llbracket \delta \rrbracket^{g,c} = \lambda y. 1$  iff.  $\forall c_i R_{\text{say}}(y, c_k)[\text{the unique } x = \text{AUTH}(c_i) \text{ is sick in } \text{WORLD}(c_i)]$ .  
 c.  $\llbracket \alpha \rrbracket^{g,c} = \lambda c_k. 1$  iff.  $\forall c_i R_{\text{say}}(\text{Hesen}, c_k)[\text{the unique } x = \text{AUTH}(c_i) \text{ is sick in } \text{WORLD}(c_i)]$   
 $= 1$  iff.  $\forall c_i R_{\text{say}}(\text{Hesen}, \mathbf{c})[\text{the unique } x = \text{AUTH}(c_i) \text{ is sick in } \text{WORLD}(c_i)]$ . (via INTENSIONALITY CONVENTION)

Thus, the system produces truth conditions where the indexical is evaluated with respect to an embedded speech context, introduced by the attitude verb. In this way, the *de se* reading of shifted indexicals is straightforwardly captured, since  $c_i$  is a series of *de se* coordinates.

As noted, if the context variable of the embedded indexical element is bound by the matrix index, then an unshifted interpretation arises. In this case,  $\iota$ -Closure is an unnecessary luxury, as the matrix index  $c_k$  is not quantified over:

- (260)  $\llbracket \delta' \rrbracket^{g,c} = \llbracket \lambda c_i [x_j + \text{author}(x_j, c_i)] \text{ be sick} \rrbracket^{c,g} = \lambda c_i. 1$  iff.  $g(j)$  is sick in  $\text{WORLD}(c_i) \wedge \partial(g(j)) = \text{AUTH}(c_k)$ .

The rest of the derivation proceeds as above, producing exactly the same truth conditions, modulo the reference of the indexical; see the appendix for a complete derivation.

Within this approach, the cross-linguistic typology of indexical shift is localized to the featural makeup of the lexemes themselves: Zazaki *vIzEri* ‘yesterday’ shifts, meaning that it is evaluated with respect to the [present] feature, while today in English, Slave, and Amharic uniformly are marked with the [present\*] feature. This is one sense in which Schlenker’s system is localist: because the featural specifications are per lexical item, even lexical items dependent on the same parameter of the context can vary as to whether they are shiftable or not. Indeed, Schlenker argues that this is a virtue, considering that English *in n days* and its French counterpart *dans n jours* show the ability to shift in attitude contexts:

(261) J

‘.(Schlenker, 1999, p.)

Schlenker also includes the English form *n days ago* in this list, but I have not encountered a speaker who agrees that it shifts. Here are two of Schlenker's examples (though with judgments provided by me and my informants):

- (262) \* John has told me repeatedly over the years that he was sick two days ago. (Schlenker, 2003, p. 64, ex. 44b)
- (263) \* John said last year that it had rained two days ago. (Schlenker, 2003, adapted from p. 66, ex. 49b)

However, it is true that *in two days* does seem to show shifting. The question is whether it is truly a case of indexical shift. First, note that it does not force a *de se* ascription:<sup>32</sup>

- (264) John goes to see a psychic, who tells him, "It will rain on the night of your wedding.", though the psychic does not know when the wedding is. In point of fact, the wedding is two days later.  
The psychic said that it would rain in two days.

Nor is the form exclusively shiftable in attitude contexts, a hallmark for shifted indexicals:

- (265) John saw Bill last Sunday. In precisely two days, Bill was dead.

Rather, I take these forms to be anaphoric to some salient time in the discourse. Thus, one potential argument for localist theories like Schlenker's seems unconvincing.

There is another sense in which pronominal-centric theories of indexical shift are localist which I discussed when considering the possibility of mixed quotational accounts: that the determination of when an indexical shifts is up to the indexical itself. The only contribution of the environment in which the indexical lies is the introduction of potential binders for the free variable an indexical introduces. This, again, has potential benefits, since it predicts that two instances of the same indexical may within the same clause depend on different indices, and hence differ in reference. As will be discussed in section (2.5.1), this is not empirically borne out for Amharic, Zazaki, or Slave. However, independent of these problems, a localist approach also cannot for the fact that different predicates treat indexical shift differently. The most extreme example of this is the language-internal typology of Slave verbs: 'want' shifts only 1st, while 'tell' shifts both 1st and

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<sup>32</sup>Schlenker notes that *in two days* is ambiguous between an intervalic reading ('within an interval measuring two days from *t*') and a punctual reading ('during the day that is two days from *t*'). Schlenker presumably seeks to exclude the former because it lacks both obligatory *de se* ascription and exclusivity of shifting only in intensional contexts; however, the same, as I show in the main text, is true for the punctual reading, which is the contextually relevant reading (the intervalic reading can be further controlled for via a continuation: *But the psychic was completely off. It only rained the day before my wedding, and I learned that day to trust a psychic as much as a Boston meteorologist.*) The French *dans deux jours*, which can only have a punctual reading. Unfortunately, my informants do not permit it to shift at all, but it is worth testing whether the following is acceptable for those who do admit shifting:

- (xix) Le clairvoyant a dit qu'il pleuvriat dans deux jours  
the psychic have say.PERF that-it rain-FUT-PAST in two days  
'The psychic said that it would rain in two days.'



2nd. Under the assumption that in all instances we are in fact dealing with the same lexical item (say, the 2nd person form), it is not clear how to even express this restriction without making reference to the attitude predicates themselves. In this spirit, one might advance binding theoretic principles along the following lines:

- (266) [hearer] DISALLOWANCE: The verb ‘tell’ prohibits elements bearing the [hearer] feature from its immediate scope.

Having adopted such restrictions, it is also tempting to cash out the obligatory shifting of ‘say’ by a similar principle:

- (267) NO FREE CONTEXT VARIABLES: The verb ‘say’ prohibits free context variables in its scope.

However, such a restriction is far too strong; it amounts to quotation.<sup>33</sup>

However, one need not consider Slave in order to drive home the problems with a purely pronominal-centric theory. Recall that the range of indexical shifting verbs is quite small; thus, within all indexical shifting languages we can recreate the 1st/2nd difference of Slave. Within a pronominal-centric theory, it is difficult to even capture the restriction of indexical shift in Zazaki and Amharic to complements of verbs of saying, since presumably all attitude verbs quantify over contexts. Note that for Schlenker this is not merely a theoretical nicety: he explicitly seeks to connect the representations of indexical shift and the two instances of *de se* anaphora considered in Chapter 1, logophors and obligatorily controlled PRO. Thus, within his system subject-controlled PRO is denotationally equivalent to a shiftable 1st person indexical, which accounts for its obligatory *de se* interpretation. But then control is indicative of quantification over contexts by control attitude verbs, and hence one would expect shifting in control contexts as well, contrary to fact in Amharic:

- (268) *sewiyye-w abbat-e fəlləgə*  
 man-DEF father-my call want.PERF.3sm  
 ‘The man wanted to call {my, \*his} father.’

The only solution I can see within a localist approach is to assume a family of rules like the [hearer] DISALLOWANCE, which ensure that shiftable features are only allowed in the scope of

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<sup>33</sup>Independent of indexicality issues, all of these languages permits embedded elements to be interpreted *de re*. Speas (1999) quite explicitly demonstrates this is true in Navajo:

- (xx) Kii says, “Hastiin Begay is a singer.” He does not know that Begay is a singer. Later, I can say:

*Kii hataalii tseeb’i’idiin binááhai n’i*  
 Kii singer eighty his-years say

‘Kii said the singer is 80 years old.’ (Speas, 1999, ex. 12a)

The same is true for Amharic and Zazaki (take any name in an example above and put it in a scenario where it is read *de re*).

certain predicates; concomitantly, one will have to assume that shifting languages have both [author\*] features and [author] features for homonymous forms (the former to account for indexicals in non-shifting environments, the latter to account for shifting environments).<sup>34</sup> As far as I can see, nothing will go terribly wrong with such an approach, since what one is doing is strengthening the theory to make it more restrictive; surely adding the appropriate empirical generalizations as stipulations of the binding theory will do no harm, but it does reduce the theory to mere description of facts.

In addition, such moves, which are contrary to the spirit of localist approaches, suggest that it is possible to move all of the action to the attitude verb itself, which apparently does dictate to a large extent what shifts. In the following subsection I will present the theory of Stechow (2002), which seeks to do exactly that.

## 2.4.2 Binding by Attitude Verbs

Partee (1989) and Heim (1991) independently noted that indexical pronouns can have apparent bound variable readings:

(269) I am the only one around here who will admit that I could be wrong. Partee (1989)

(270) Only I did my homework. Heim (1991)

(270) has two readings, which can be paraphrased as follows:

(271) I did my homework, and:

- a. For all  $x$  other than me,  $x$  did my homework. strict reading
- b. For all  $x$  other than me,  $x$  did  $x$ 's homework. sloppy reading

It is the second reading (arguably, the more pragmatically accessible for (270)) that is puzzling here. The puzzle arises because, in general, presuppositions project outside universal quantifiers:

(272) [Every doctor]  $\lambda i$  [ $t_i$  called his <sub>$i$</sub>  spouse].

Assertion:  $\forall x[\llbracket \text{doctor} \rrbracket^{c,g}(x) = 1 \Rightarrow \llbracket t_i \text{ called his}_i \text{ spouse} \rrbracket^{c,g(i/x)} = 1]$ .

Presupposition:  $\forall x[\llbracket \text{doctor} \rrbracket^{c,g}(x) = 1 \Rightarrow \llbracket \text{male} \rrbracket^{c,g}(x) = 1]$ .

I will assume here that the *only* in *only DP* is a generalized quantifier with the following semantics:

(273)  $\llbracket \text{only}_C \rrbracket^{c,g} = \lambda x_e \lambda Q_e t : Q(x) = 1. \forall y \in C[y \neq x \Rightarrow Q(y) = 0]$ .

The (270) under the sloppy reading has the following LF, assuming that the Saxon genitive is translated as a definite description and Schlenker's [author\*] feature:

(274)  $\llbracket \text{only} [x_1 + \text{author}^*(x_1)] \rrbracket [\lambda x_g x_8 \text{ did } [\text{the homework of } [x_8 + \text{author}^*(x_8)]]]$

<sup>34</sup>At this point, it would be simpler, I think, to adopt a purer ambiguity theory: *Zazaki I* is homonymous between a logophor and a non-shiftable indexical; all apparent cases of shift are merely the presence of a logophor.

But then [author\*] introduces a presupposition:

$$(275) \quad [\alpha]^{c,g} = \lambda x_g : g(8) = \text{AUTH}(c). \text{do}(g(8), \iota x[\text{homework-of}(g(8), x)]) = 1.$$

This presupposition projects to the restriction of the universal quantifier in *only I*, yielding the following derivation:

$$(276) \quad \begin{array}{l} \text{a. } [\text{only}_C [x_1 + \text{author}^*(x_1)]]^{c,g} = \lambda Q_{et} : Q(g(1)) = 1. \forall y \in C [y \neq g(1) \Rightarrow Q(y) = 0]. \\ \text{b. } [[\text{only}_C [x_1 + \text{author}^*(x_1)]] \alpha]^{c,g} = 1 \text{ iff. } \forall y \in C [\partial(y = \text{AUTH}(c)) \wedge y \neq g(1) \Rightarrow \\ \text{do}(y, \iota x[\text{homework-of}(y, x)]) = 0] \wedge \partial(\text{do}(g(1), \iota x[\text{homework-of}(g(1), x)]) = 1). \end{array}$$

But assuming that there is a unique author for the utterance context, the projected presupposition cannot be true for all contextually given alternatives for the prejacent, and thus the bound variable reading necessarily produces a presupposition failure, contrary to fact. Note that the problem is the [author\*] feature on the bound pronoun; were it in fact semantically ignored, the correct truth conditions would be derived.

The lesson from this example, then, is that 1st person morphology does not require 1st person semantic features in cases of binding. Stechow (2002) proposes that this is because the semantic features of elements are *deleted* under variable binding.<sup>35</sup>

#### (277) LF FEATURE DELETION UNDER VARIABLE BINDING

Delete the features of all variables that are bound. (Stechow, 2002)

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<sup>35</sup>There are many ways to state this rule. Schlenker (1999); Heim (2002) treat this as a PF-condition on the spell-out of variables, who inherit features transmitted by their binders. Kratzer (1998) postulate the existence of special “null-pronouns,” which function as variables, but whose syntactic distribution is highly constrained. The choice point between these competing theories seems to be based on one’s views about how PF and LF communicate with each other. Thus, under the PF-transmission stories, an additional mechanism is required to explain how an eventual binder at LF (i.e., a quantifier) can enforce a PF requirement. Concretely, assuming the quantificational account of *only DP*, there exist apparent inverse-linking constructions which also show sloppy readings:

- (xxi) John, Bill, and Sam just turned eighteen, and decide that they should take a trip to Vegas to celebrate. Unfortunately, the three have done some rather immature things in the past and are afraid that their parents will not permit the trip. Bill in particular is worried, given the restrictions his parents have recently placed on him. Happily, though, they each catch their parents in a good mood, and all are granted permission.

Bill: Wow! Our parents are really starting to trust us. Even my parents said I could go.

Assuming the same structure as above, [even I] would have to raise to bind the variable *I* below; as this presumably does not occur prior to spell out, it cannot license a PF-transmission. Thus, a transmission approach requires a further wellformedness condition on PF and LF representation pairs. One might take this example to suggest that indeed these are simply cases of association with focus by a focus sensitive operator. Schlenker (2003) in fact claims that these and ellipsis are the only crucial contexts where such featural deletion occurs. However, the picture is a bit more complicated in English, where predication seems to produce similar effects:

- (xxii) a. I am the kind of person who likes my ‘alone’ time.  
b. I’m someone who knows what I want.

This rule will suffice to explain the appearance of 1st person morphology on the bound variable, and thus prevent the unwanted presupposition from entering into the truth conditions of the sentence. Following von Stechow, I will represent featural deletion via strikethrough; this is to indicate that the feature is semantically inert:

(278) [only [ $x_1$  +author\*( $x_1$ )]] [ $_{\alpha}$   $\lambda x_8$   $x_8$  did [the homework of [ $x_8$  +~~author\*( $x_8$ )~~]]]

Note, however, that this feature must be present in order to ensure that binding occurs under featural identity (this to rule out a sloppy interpretation of *Only John did my homework.*). The following rule accomplishes this:

(279) BINDING UNDER MATCHING  
If  $\alpha$  binds  $\beta$  that  $\alpha$  and  $\beta$  agree in  $\phi$  features.

It is from here that Stechow (2002) begins his account for indexical shift. The core intuition is that indexical shift is a species of variable binding, and that what obscures this is morphological mismatch. Like Schlenker, von Stechow takes attitude verbs to be quantifiers over contexts; thus, they can serve to bind indexical elements, but only insofar as BINDING UNDER MATCHING holds. The paradigm example of this is the particular LF for *de se* readings of attitude verbs (I will treat [3rd] as a semantically vacuous feature which only serves to restrict binding):<sup>36,37</sup>

(280) a. John<sub>i</sub> said<sub>j</sub> his<sub>j</sub> pants were on fire.  
b. [John 3rd]  $\lambda i$  [say 3rd]  $\lambda \langle x_j^{3rd}, z_k, w_i, t_i \rangle$  [ $x_j$  ~~3rd~~]'s pants be on fire de se LF  
c. [John 3rd]  $\lambda i$  [say 3rd]  $\lambda \langle x_j^{3rd}, z_k, w_i, t_i \rangle$  [ $y_i$  ~~3rd~~]'s pants be on fire non-de se LF

(280b) is the corresponding *de se* LF, which is quite parallel to the one arrived at in Chapter 1 (though, note, that I also argued that English attitude verbs do not in general make use of this LF). von Stechow assumes that attitude verbs inherit their features from their arguments (this is via the syntax of agreement, but need not concern us here), hence the 3rd person subject *John* above induces a 3rd person feature on the verb. This serves to effectively limit *de se* LFs to those where the *de se* variable agrees in  $\phi$  features with the attitude holder. Hence, *John said my pants were on fire.* cannot give rise to a *de se* reading – only *I said my pants were on fire.* (and likewise, *Only I said my pants were on fire.*) can.<sup>38</sup>

Like Schlenker, von Stechow aims to extend this analysis to the case of shifted indexicals. However, in such languages, it cannot be that agreement between the attitude holder and the embedded *de se* element is necessary, else indexical shift would not result. von Stechow thus

<sup>36</sup>von Stechow adopts Lewis's  $\langle x, w, t \rangle$  triple quantification by attitude verbs; below, I introduce the addressee parameter as well.

<sup>37</sup>In what follows, I again ignore temporal and modal information in order to ease explication; see the appendix for a precise formalization.

<sup>38</sup>The same structure is employed for obligatory control structures:

(xxiii) a. John<sub>i</sub> wants<sub>j</sub> PRO<sub>j</sub> to win the lottery.  
b. [John 3rd]  $\lambda i$  [want 3rd]  $\lambda \langle x_j^{3rd}, z_k, w_i, t_i \rangle$  [PRO<sub>j</sub> ~~3rd~~]'s pants be on fire de se LF

formulates a parametrized condition on shifting languages, which I have adapted here for our discussion:<sup>39</sup>

(281) THE 1ST PERSON PARAMETER

Attitude verbs in Amharic can bind [author\*] elements, regardless of BINDING UNDER MATCHING.

Thus, the following LF is in fact licit in Amharic:

(282) [John 3rd]  $\lambda i$  [say 3rd]  $\lambda \langle x_j^{3rd}, z_k, w_i, t_i \rangle$  [ $x_j$  +author\*]'s pants be on fire de se LF

As the embedded indexical's [author\*] feature is deleted under binding, the presupposition that  $g(j) = \text{AUTH}(c)$  is removed from the semantic computation, thus preventing a presupposition failure, since none of John's say-alternatives is the utterance author.

Before continuing, I would like to consider a few refinements of the system. First, as noted when I discussed Schlenker's system, it is important to note that only *alu* and its derivatives shift in Amharic. Thus, THE 1ST PERSON PARAMETER needs to be relativized to only *one* attitude verb in Amharic; I will suppose that this is accomplished via a diacritic on the verb. The fact that we can do this I consider a virtue of this system over Schlenker's. Second, Stechow (2002) only deals with 1st person shifting. To handle the fact that Aghem, Amharic, Navajo, Slave, and Zazaki shift 2nd person indexicals, we apparently need a 2ND PERSON DIACRITIC, allowing the relevant attitude verbs to bind [hearer\*] elements as well. Note, however, that these parameters must explicitly mention relevant coordinates of the index introduced by the attitude verb. I will express these syncategorematically:

(283) THE 1ST PERSON DIACRITIC (FIRST)

$\forall \lambda \langle x^a, y^b, w, t \rangle$  [ $x$  + author\*] is a well-formed expression, regardless the person features *a*.

(284) THE 2ND PERSON DIACRITIC (SECOND)

$\forall \lambda \langle x^a, y^b, w, t \rangle$  [ $y$  + hearer\*] is a well-formed expression, regardless the person features *b*.

Finally, in order to capture that Zazaki shifts temporal and locative indexicals, we will have to both add a locative coordinate to indices and add the relevant diacritics:

(285)  $[\text{say}]^{c,g} = \lambda p_{\kappa,t} \lambda a_e \lambda i. \forall i' R_{\text{say}} \langle a, i \rangle [p(i') = 1]$ , where  
 $i' R_{\text{say}} \langle a, i \rangle$  iff.  $i'$  is compatible with what  $a$  said in WORLD( $i$ ) at TIME( $i$ ) and LOC( $i$ ).

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<sup>39</sup>von Stechow's actual formulation is:

(xxiv) THE 1<sup>st</sup> PERSON PARAMETER

Amharic verbal quantifiers (i.e., attitude verbs) delete (LF) the feature 1<sup>st</sup> of the person variable they bind, regardless of what their person checkee (i.e., the subject person feature) is. (Stechow, 2002, ex. 48)

- (286) THE TEMPORAL DIACRITIC (TEMP)  
 $\forall \lambda \langle x^a, y^b, w, t^c, l^d \rangle [t + \text{present}^*]$  is a well-formed expression, regardless the temporal features  $c$ .
- (287) THE LOCATION DIACRITIC (LOC)  
 $\forall \lambda \langle x^a, y^b, w, t^c, l^d \rangle [l + \text{here}^*]$  is a well-formed expression, regardless the locative features  $d$ .
- (288) a.  $[[+\text{present}^*]]^{c,g} = \lambda t_r : t = \text{TIME}(c).t$   
 b.  $[[+\text{here}^*]]^{c,g} = \lambda l_{loc} : l = \text{LOC}(c).l$

Equipped with these additions to the theory, it is possible to account for the cross-linguistic typology in (223):

	LANGUAGE	WHAT SHIFTS	WHEN	DIACRITICS
	Aghem	1st & 2nd person	say	FIRST, SECOND
	Amharic	1st person	say	FIRST, SECOND
(289)	Navajo	1st & 2nd person	say (want, think)	FIRST, SECOND
	Slave	1st person	say, want, think	FIRST
	Slave	1st & 2nd person	tell	FIRST, SECOND
	Zazaki	all indexicals	say	FIRST, SECOND, TEMP, LOC

However, it is still necessary to say something about the Slave verb ‘say’, which obligatorily shifts 1st person indexicals. For this, I will introduce a final diacritic, which forces binding of 1st person elements (this is, in essence, the same as the NO FREE CONTEXT VARIABLES restriction in (267), except that it applies only to the author coordinate):

- (290) NO FREE 1ST  
 $\forall \lambda \langle x^a, y^b, w, t, l \rangle [z + \text{author}^*]$  is an ill-formed expression.

In sum, von Stechow’s system can be extended to account for the cross-linguistic typology presented in (223) by the introduction of various diacritics for each of the coordinates of the context. Note that this is possible precisely because the locus of indexical shift is the attitude verb itself, which I earlier referred to as “global.” The globalist character of this theory allows us to capture the constraints on shifting as constraints on the verbs themselves. However, this is not the end of the story. In the previous sections, I have been conspicuously tight-lipped about the behavior of multiple shifting indexicals underneath shifting predicates. As I will show in the following section, multiple indexicals must “shift-together,” a fact that neither von Stechow’s or Schlenker’s theories predict.

## 2.5 Constraints on Multiple Shifting Indexicals

As I have shown, outside of Slave ‘say’, indexical shift is optional, and thus a sentence with a shiftable indexical underneath a shifting predicate is ambiguous. In principle (and as the theories above would predict), *two* shiftable indexicals under a shifting predicate should render a sentence

four-ways ambiguous. However, this is not the case in Amharic, Slave, and Zazaki. To begin with, I will consider the cases of Slave and Zazaki, as Amharic has some complexities that obscure these facts (and, indeed, might argue otherwise).

## 2.5.1 Monoclausal Cases: SHIFT TOGETHER

To start, consider the following Slave example:

- (291) [sehlégé segha gon'ihkie rárule] yudeli  
 [1.sg-friend 1.sg-for slippers 3.sg-will-sew] 3.sg-want-4.sg  
 'She<sub>j</sub> wants her<sub>j</sub> friend to sew slippers for her<sub>j</sub>.' (Rice, 1986, p. 52, ex. 52)

'She wants my friend to sew slippers for me.' (Keren Rice, p.c.)

As the glosses indicate, this sentence is only two-ways ambiguous: the two 1st person indexicals may either refer to the matrix subject or the utterance author; no mixed readings are allowed. This situation may be schematized as follows:

- (292) a. c want  $i_i$  [my(c) friend . . . for me(c)]  
 b. c want  $i_i$  [my( $i_i$ ) friend . . . for me( $i_i$ )]  
 c. \*c want  $i_i$  [my(c) friend . . . for me( $i_i$ )]  
 d. \*c want  $i_i$  [my( $i_i$ ) friend . . . for me(c)]

That is, if one 1st person indexical shifts, *all* 1st person indexicals must shift along with it. The same generalization holds in Zazaki. First, consider an example corresponding to *Rojda said that I am angry at you*. As with the Slave example above, the 1st and 2nd person indexicals must either shift together or non-shift together.

- (293) vizeri Rojda Bill-ra va ke ez to-ra miradiša (Anand and Nevins, 2004)  
 yesterday Rojda Bill-to said that I you-to angry.be-PRES  
 'Yesterday Rojda said to Bill, "I am angry at you."'  
 'Yesterday Rojda said to Bill, "AUTH(c) is angry at ADDR(c)."'  
 '\*Yesterday Rojda said to Bill, "AUTH(c) am angry at you."'  
 '\*Yesterday Rojda said to Bill, "I am angry at ADDR(c)."'

The same generalization holds with locative and temporal indexicals:

- (294) Heseni returns to Diyarbekir with his young son Ali.  
 waxto ke e Diyarbekir-de bime, Heseni Ali-ra va ke ti ita ame dina  
 when that they D.-at were, Heseni.OBL Ali-at said that you here came world  
 'When they were in Diyarbekir, Heseni<sub>i</sub> told Ali, "you were born here."'  
 'When they were in Diyarbekir, Heseni<sub>i</sub> told Ali, "ADDR(c) was born in LOC(c)."'  
 '\*When they were in Diyarbekir, Heseni<sub>i</sub> told Ali, "ADDR(c) was born in Diyarbekir."'  
 '\*When they were in Diyarbekir, Heseni<sub>i</sub> told Ali, "You were born in LOC(c)."'

- (295) Həsen hefti nayeraver reyāl keno va kɛ ɛz Rojdaa de hefti naeratepia paci  
 Hesen week ago plan did said that I Rojda.OBL two weeks after kiss  
 kena  
 will-do  
 ‘A week ago, Hesen planned: “I will kiss Rojda in two weeks.” ’  
 ‘A week ago, Hesen planned: “AUTH(c) will kiss Rojda in three weeks [two weeks from  
 TIME(c)].” ’  
 ‘\*A week ago, Hesen planned: “AUTH(c) will kiss Rojda in two weeks.” ’  
 ‘\*A week ago, Hesen planned: “I will kiss Rojda in three weeks.” ’

Finally, let me note that these constraints are generalizable to cases of further embedding. Thus, when we embed (293) further under a shifting verb, there are only three readings (instead of the nine possible):

- (296) Ali Fatima-ra va kɛ Rojda Bill-ra va ɛz to-ra miradiša  
 Ali Fatima-to say-PERF that Rojda Bill-to said I you-to angry.be-PRES  
 (Anand and Nevins, 2004)

- ‘Ali said to Fatima that Rojda said to Bill “I am angry at you.” ’  
 ‘Ali said to Fatima, “Rojda said to Bill that I am angry at you.” ’  
 ‘Ali said to Fatima that Rojda said to Bill that I am angry at you.’

This means that on indexical shift are not simply with respect to the utterance context and embedding indices; the constraint is operational between indices as well. I will call this SHIFT TOGETHER, and schematize it as follows:

- (297) SHIFT TOGETHER Constraint  
 All shiftable indexicals within a *attitude-context domain* must pick up reference from the same context.<sup>40</sup>

- a.  $C_A [ \dots \text{modal } C_B \dots [ \text{ind}_1 \dots \text{ind}_2 ] ]$   
 b.  $C_A [ \dots \text{modal } C_B \dots [ \text{ind}_1 \dots \text{ind}_2 ] ]$   
 c. \*  $C_A [ \dots \text{modal } C_B \dots [ \text{ind}_1 \dots \text{ind}_2 ] ]$   
 d. \*  $C_A [ \dots \text{modal } C_B \dots [ \text{ind}_1 \dots \text{ind}_2 ] ]$

What about Amharic? On first blush, it appears to violate SHIFT TOGETHER, given the following example.<sup>41</sup>

<sup>40</sup>A speech-context domain is the scope of an attitude verb up to the scope of the next c-commanded attitude verb.

<sup>41</sup>The examples marked grammatical below were rejected by 5 of my informants as ungrammatical, and called “formal” (i.e., archaic) by 3 informants (who do accept them). 7 informants found them acceptable. Under the





\*Bill<sub>i</sub> said John<sub>j</sub> said he<sub>i</sub> will not obey me.’

\*Bill<sub>i</sub> said John<sub>j</sub> said I will not obey him<sub>i</sub>.’

The lack of the final (starred) reading might be expected to follow from whatever explains the unambiguity of (298), but the lack of the third reading is indeed surprising if 1st person indexicals in Amharic do not obey SHIFT TOGETHER. Second, when the embedded predicate is not one that can shift, suddenly SHIFT TOGETHER is obeyed (here I switch to the scheme that does not violate Condition B for expository purposes; the corresponding Condition B examples are ungrammatical):<sup>42</sup>

- (303) Mary John lij-e ay-ittazzəzə-ññ yiSəll ig-all aləCC  
 Mary John son-my NEG.3s-obey.mkimper-1sO think.IMPER-3sm say.PERF.3sf  
 ‘Mary<sub>i</sub> said, “John<sub>j</sub> believes my son will not obey me.” ’  
 ‘Mary<sub>i</sub> said, “John<sub>j</sub> believes AUTH(c)’s son will not obey AUTH(c).” ’  
 \*‘Mary<sub>i</sub> said, “John<sub>j</sub> believes my son will not obey AUTH(c).” ’  
 \*‘Mary<sub>i</sub> said, “John<sub>j</sub> believes AUTH(c)’s son will not obey me.” ’

All of this suggests the following generalization:

- (304) AMHARIC SHIFT SEPARATE GENERALIZATION  
 If two 1st person indexicals do not co-refer in a clause, one must refer to the subject of the immediately c-commanding attitude verb, if possible.

I would like to suggest that what is responsible for this constellation of puzzling data is, in fact, a case of homonymy between a *bona fide* indexical I and a logophoric pronoun LOG-I. Importantly, this homonymy must extend to the  $\phi$  features for person, triggering the same verbal morphology. Based on the theory advanced in Chapter 1, I will assume that this logophor is likewise a variable that must be bound by an operator in Comp. As it is only found in the immediate scope of *alu*, I will assume that LOG-I is a local logophor (hence, something of the equivalent of PRO), and that the logophoric operator OP<sub>I</sub>OG is introduced only by *alu*. These conditions are summarized below:

	PRONOUN	SEMANTIC FEATURES	SYNTACTIC FEATURES	MORPHOLOGICAL FEATURES
(305)	I	[author*]	–	[1st]
	LOG-I	–	[log], [loc]	[1st]

- (306) Subcategorization: *alu* optionally selects for OP-LOG.

Although admittedly stipulative, this proposal does make one testable prediction – that the LOG-I form is subject to the LOGOPHORIC BLOCKING EFFECT. Thus, when a *de re* pronoun c-commands a shifted 1st person, 2nd must also shift:<sup>43</sup>

<sup>42</sup>The following forms all produce this effect: believe, suspect, think, hope, know.

<sup>43</sup>Again, I control for an E-Type reading here by not providing a linguistic antecedent.



Testing NO INTERVENING BINDER requires rather rich scenarios, which I will describe below. I will first discuss the Zazaki data. As before, I will consider cases with two person indexicals, with a person and locative indexical, and a person and a temporal indexical. Let me begin with the case of two person indexicals.

### Two person indexicals

Our target sentence for this example will be the following, where I have marked the potentially shifting indexicals in bold:

(311) C@ Ali said C<sub>1</sub> to me that Hesen said C<sub>2</sub> to **you** that **I** am Rojda’s brother.

Now, NO INTERVENING BINDER says the following. Suppose *you* shifts to be dependent on C<sub>1</sub> (as opposed to C@). Then the embedded *I* may either be dependent on C<sub>1</sub> or C<sub>2</sub>, but it cannot be dependent on C@. In this sense, the embedded *you* and *I* must shift together, provided, of course that *I* itself does not shift further. This is the first prediction. The second prediction is the inverse: if *you* does not shift, then *I* cannot depend on C<sub>1</sub> in turn; it may either depend on C@ (what *you* depends on) or C<sub>2</sub> (via further shift). Let’s see if these predictions are true.

To test the first, assume the following scenario:

(312) S<sub>1</sub>: Andrew is the brother of the famous traitor Rojda. Understandably, he keeps this knowledge secret from his new friends, Hesen and Ali. One day, Hesen finds out Andrew’s secret and confronts him, saying, “You are Rojda’s brother.” Unfortunately for Andrew, things get worse. Ali, the local busybody happens to be outside for the conversation, and hears Hesen’s revelation. He barges in on Andrew himself later that day, saying, “Hesen said to you that you are Rojda’s brother.” Andrew, looking for consolation, complains of his troubles to Pranav, a friend entrusted with his secret. Can Andrew say to Pranav, “Ali said to me that Hesen said to you that I am Rojda’s brother”?

Note that NO INTERVENING BINDER is highly similar to how indexicals shift under quotation. Thus, it predicts that S<sub>1</sub> should be bad for the target sentence because, in essence, Ali’s actual report was “Hesen said to you that **you** are Rojda’s brother.” The replacement of the second *you* by an *I* would be the culprit. Here are the relevant readings (of course, none of them are salient in the scenario above):

(313) (Andrew<sub>U</sub>): Ali<sub>A</sub> mi<sub>U</sub>-ra va ke Hesen<sub>H</sub> to<sub>U</sub>-ra va εZ<sub>{H,A,\*U}</sub> braye Rojda-o  
 Ali me-to said that Hesen you-to said I brother Rojda-GEN  
 ‘Ali said to Andrew that Hesen said to Andrew that {Hesen, Ali, \*Andrew} is Rojda’s brother.’ (Anand and Nevins, 2004)

Indeed, the first prediction is true. For completeness, that this is crucially about the shifted *you* can be demonstrated by considering a modification of S<sub>1</sub> in which Ali overheard Hesen talking to some *other* person, Fatima, about Andrew’s secret. Then the embedded *I* can refer to Andrew:

Andrew could then report as follows:

- (314) (Andrew<sub>U</sub>): Ali<sub>A</sub> mi<sub>U</sub>-ra va ke Heseni<sub>H</sub> Fatima-ra va εZ<sub>{H,A,U}</sub> braye  
 Ali me-to said that Hesen Fatima-to said I  
 Rojda-o  
 brother Rojda-GEN  
 ‘Ali said to Andrew that Hesen said to Fatima that {Hesen, Ali, Andrew} is Rojda’s  
 brother.’ (Anand and Nevins, 2004)

But recall the second prediction. If the *you* does not shift, then the *I* cannot refer to Ali. Consider the following scenario:

- (315) S<sub>2</sub>: Now suppose Ali is Rojda’s brother. Hesen discovers this fact and comes running to Pranav to let him know about Ali’s dark secret. Ali overhears this conversation and comes to complain about it to Andrew. So Ali says, “Hesen said to Pranav that I am Rojda’s brother.” Andrew goes to talk to Pranav to be assured this is true. Can Andrew say, “Ali said to me that Hesen said to you that I am Rojda’s brother.”?

As expected, no. Reference to Ali is out:

- (316) (Andrew<sub>U</sub>): Ali<sub>A</sub> mi<sub>U</sub>-ra va ke Heseni<sub>H</sub> to<sub>U</sub>-ra va εZ<sub>{H,\*A}</sub> braye Rojda-o  
 Ali me-to said that Hesen you-to said I brother Rojda-GEN  
 ‘Ali said to Andrew that Hesen said to Andrew that {Hesen, \*Ali, Andrew} is Rojda’s  
 brother.’

We can replicate the exact same facts in Amharic:

- (317) (Andrew<sub>U</sub>): Ali<sub>A</sub> Heseni<sub>H</sub> yə-Rojda-w wəndim nəññ alə-h  
 Ali Hesen POSS-Rojda-DEF brother be.PRES-1sO say.PERF.3sm-2smO  
 alə-ññ  
 say.PERF.3sm-1sO  
 ‘Ali said to Andrew that Hesen said to Andrew that {Hesen, Ali, \*Andrew} is Rojda’s  
 brother.’

### Person and Locative Indexicals

Now the target sentence will be *When we were in Diyarbekir, Hesen said that here Rojda said she was my sister*. The scenario will be essentially the same, only now locations are introduced.

- (318) S<sub>3</sub>: [Andrew-Rojda scenario]. Suppose that Hesen discovers Andrew’s secret from Rojda herself, who he meets in Diyarbekir while on a return visit home. He returns to Boston and confronts Andrew about his sister. Andrew is shocked and demands to know how Hesen has discovered this fact, but Hesen is steadfastly silent, as he doesn’t want Andrew to know that he and Rojda have been involved with each other. Years pass, and Rojda is found and executed by the State. Both Andrew and (to Andrew’s surprise) Hesen fly back for the funeral. While reminiscing about old-time Diyarbekir, Hesen becomes maudlin, and confesses to Andrew about his relationship with Rojda,

finally telling him, “It was here that she said she was your sister.” Can Andrew, back in Boston, report this to Pranav as, “When we were in Diyarbekir, Hesên said that here Rojda said that she was my sister.”?

(Andrew<sub>U</sub>): Waxto ke ma Diyarbekir<sub>l</sub>-de bime, Heseni<sub>i</sub> mi-ra va ke ita<sub>l</sub>  
 When that we D.-at were, Hesên.OBL me-at said that here  
 Rojdaa<sub>j</sub> va ae<sub>j</sub> waya mIya<sub>{i,\*U}</sub>  
 Rojda.mkobl said she sister my

‘When we were in Diyarbekir<sub>l</sub>, Hesên<sub>i</sub> told Andrew that here<sub>l</sub> Rojda<sub>j</sub> said that she<sub>j</sub> was {Hesên’s, \*Andrew’s} brother.’

Note that if *ita* refers to Boston (i.e., does not shift), the embedded *mIya* cannot refer to Hesên, but reference to Andrew is acceptable:

(319) (Andrew<sub>U</sub> at Boston<sub>B</sub>): Waxto ke ma Diyarbekir<sub>l</sub>-de bime, Heseni<sub>i</sub> mi-ra va ke  
 When that we D.-at were, Hesên.OBL me-at said that  
 ita<sub>B</sub> Rojdaa<sub>j</sub> va ae<sub>j</sub> waya mi<sub>{i,\*U}</sub>  
 here Rojda.mkobl said she sister.EZ my

‘When we were in Diyarbekir<sub>l</sub>, Hesên<sub>i</sub> told Andrew that here<sub>B</sub> Rojda<sub>j</sub> said that she<sub>j</sub> was {\*Hesên’s, Andrew’s} brother.’

### Temporal and Locative Indexical

Our target will be *Hesên said that yesterday Rojda said she would meet him here*.

(320) Andrew and Pranav are waiting for Rojda at the Arnold Arboretum, which is close to her house. She is extremely late, which is unusual for her. Finally, Andrew becomes worried, and wonders aloud whether Rojda is lost. Pranav suggests that this might be the case, because when he was talking to Hesên, Rojda’s husband, the week before about the trip to the Arboretum, Hesên told him, “Well, I don’t know if she knows where things are yet. Yesterday, she told me she would meet me there, but she got lost and I had to go searching for her all over Boston.” Can Pranav report this conversation as “Hesên said that yesterday Rojda said she would meet him here.”?

Hefte nayeraraver, Heseni<sub>i</sub> va ke Rojdaa<sub>j</sub> vizeri va ae<sub>j</sub> ita Sona o<sub>i</sub>  
 week ago, H.OBL said that Rojda.OBL yesterday said she here go him  
 vinena.  
 see-PROG

‘A week ago (from time<sub>t</sub>), Hesên<sub>i</sub> said that Rojda<sub>j</sub> said eight days ago that she<sub>j</sub> would meet him<sub>i</sub> at {their<sub>i+j</sub> house, \*the Arboretum}.’

If *vizeri* is interpreted with respect to the matrix time, then *here* cannot refer to the location of Hesên’s speech (the house):

- (321) Hefte nayeraraver, Heseni<sub>i</sub> va ke Rojdaa<sub>j</sub> **vizeri** vaneno ae<sub>j</sub> ita Sona o<sub>i</sub>  
 week ago, H.OBL said that Rojda.OBL yesterday say-FUT she here go him  
 vinena.  
 see-PROG  
 ‘A week ago (from time<sub>t</sub>), Heseni<sub>i</sub> said that Rojda<sub>j</sub> would said yesterday that she<sub>j</sub> would  
 meet him<sub>i</sub> at {\*their<sub>i+j</sub> house, the Arboretum}.’

This accords with the findings in the previous sections. Thus, I have shown that for both Zazaki and Amharic, a cross-clausal generalization of *shift together* constrains the shifting possibilities of indexicals.

## 2.6 Analysis

### 2.6.1 Fixing the verbal-quantifiers approach

I have presented in this section evidence for a significant constraint on indexical shift NO INTERVENING BINDER: for any two shiftable indexicals  $ind_1$  and  $ind_2$  in a domain  $D$ ,  $ind_1$  may be dependent on speech-context  $C_A$  different from  $ind_2$ 's speech-context only if  $ind_2$  is not c-commanded by  $C_A$ .

As mentioned previously, this generalization is quite difficult to capture within a localist framework. Note that it makes crucial reference to the contexts of speech themselves (and thus the attitude verbs that introduce them). If all of the action lies in the pronouns, it is not clear to me how this can capture the relevant contrasts. The altered version of von Stechow's system fares much better, since it allows generalizations at the level of the attitude verb to be stated. First, in order to capture the fact that 1st and 2nd (and temporal and locative) indexicals shift together in Amharic and Zazaki, I will propose collapsing the various diacritics as follows:

	LANGUAGE	WHAT SHIFTS	WHEN	DIACRITICS
(322)	Amharic	1st & 2nd person	say	PER
	Zazaki	all indexicals	say	ALL

The diacritics are a combination of the various binding diacritics and versions of NO FREE 1ST:

(323) PER = FIRST+SECOND+NO FREE 1ST+NO FREE 2ND

(324) FIRST+SECOND

$\forall \lambda \langle x^a, y^b, w, t \rangle [x + author*]$  is a well-formed expression, regardless the person features  $a$ .  $\forall \lambda \langle x^a, y^b, w, t \rangle [y + hearer*]$  is a well-formed expression, regardless the person features  $b$ .

(325) NO FREE 1ST+NO FREE 2ND

$\forall \lambda \langle x^a, y^b, w, t, l \rangle [z + author*]$  is an ill-formed expression.  $\forall \lambda \langle x^a, y^b, w, t, l \rangle [z + hearer*]$  is an ill-formed expression.

Thus, PER simultaneously licenses binding of 1st and 2nd person indexicals and forbids the appearance of free 1st and 2nd person elements. This forces SHIFT TOGETHER. With this logic in place, ALL=FIRST+SECOND+TEMP+LOC+NO FREE 1ST+NO FREE 2ND+NO FREE TEMPORAL+NO FREE LOCATIVE.

But note that such marked verbs are thus unselective binders over the relevant indexical features; no indexical, however deep, can escape their binding, unless, of course, another diacritically marked verb enters the picture lower down. This is precisely NO INTERVENING BINDER, and hence capturing SHIFT TOGETHER forces NO INTERVENING BINDER.

However, recall that I introduced NO FREE 1ST in order to handle the fact that Slave ‘says’ obligatorily shifts. As we have seen, the relevant generalizations (outside of Slave ‘says’) is that shifting is optional, but that when it happens, everything must shift together. What this must amount to is that verbs in these languages are ambiguous between two forms, one with the diacritic and one without.

I think the present modification to von Stechow’s original proposal gets all of the facts correctly. However, it misses what I take to be a crucial generalization, namely that all of these languages appear to obey (at least) SHIFT TOGETHER (Peggy Speas, p.c. suggest that this is true for Navajo as well, but it must be checked), while Yoruba logophors appear to be freer in their distributional patterns. Furthermore, the diacritics are, admittedly, rather parochial – why can an attitude verb disregard a general rule of morphosemantics, and why *only* attitude verbs.

In the remainder of this section, I will propose a system that does not have these problems, and that derives NO INTERVENING BINDER naturally. The core intuition behind the proposal will be that the behavior of shifted indexicals mirrors exactly what we observed would happen if diagonalization operators were allowed in the syntax of natural language. I will propose that this is precisely what is going on in these cases.

## 2.6.2 The proposal

For most of the proposal, I will hew closely to Kaplan’s original double-indexed system, since it allows the functioning of the operators to be more perspicuously demonstrated. There are well-known problems for this theory (e.g., Cresswell (1990); Percus (2000); Kusumoto (1999)) that suggest we require the expressive power of quantification over these elements in the object language; the extensional logic I assumed at the beginning of the chapter is one such setup. In the close of this section I will show how such a system can be minimally modified to incorporate context-overwriters.

Recall the function of Stalnaker’s  $\delta$ , which overwrites the context coordinates with the index coordinates:

$$(326) \quad \llbracket \text{OP}_{diag} \rrbracket^{c,i} = \lambda \chi_{\kappa\kappa t} \cdot \chi(i)(i).$$

As noted, this forces all indexical reference to shift:

$$(327) \quad \llbracket \text{OP}_{diag} [\text{I am here}] \rrbracket^{c,i,g} = \llbracket \text{OP}_{diag} \rrbracket^{c,i} (\lambda c' \lambda i'. \llbracket \text{I am here} \rrbracket^{c',i',g}) = \llbracket \text{I am here} \rrbracket^{i',i',g} = \text{AUTH}(i') \\ \text{is at LOC}(i') \text{ in WORLD}(i') \text{ at TIME}(i').$$



This is the case in Zazaki. I would therefore like to propose that this very operator is involved in Zazaki indexical shift; from here on, I will call it  $OP_V$ . Let me make things a little more concrete: suppose  $OP_V$  sits in a Comp position, and that Zazaki ‘say’ optionally selects for a CP headed by  $OP_V$ . This gives us two possible representations for *Rojda didn’t say I kissed anyone.*:

- (328) a. [Rojda NEG say [ $CP$  I kissed anyone.]] indirect discourse  
 b. [Rojda NEG say [ $CP$   $OP_V$  I kissed anyone.]] indexical shift

It is the second that is of interest here. Following the computations above,  $[[OP_V [I kissed anyone]]]^{c,i,g} = [[I kissed anyone]]^{i',i',g=1}$  iff  $\exists x[person(x) \wedge AUTH(i') \text{ kissed } x]$ . Now, since the index is quantified over by the attitude verb, it represents a tuple of *de se* coordinates; in particular,  $AUTH(i')$  will be the *de se* counterparts of the attitude holder, who in this case is Rojda. Thus, all shifted indexicals will be interpreted *de se*, as in Schlenker’s and von Stechow’s theory. But there is something more: since the context’s values have been altered, every indexical will simultaneously shift; in other words, the system predicts SHIFT TOGETHER:

- (329) a. Vizeri Rojda Bill-ra va ke ez to-ra miradiša  
 Yesterday Rojda Bill-to said that I you-to angry.be-PRES  
 ‘Yesterday Rojda said to Bill, “I am angry at you.”  
 ‘Yesterday Rojda said to Bill, “ $AUTH(c@)$  is angry at  $ADDR(c@)$ .”
- b.  $[[yesterday Rojda Bill-to say \alpha]]^{c,i} = 1$  iff.  $\forall j$  compatible with what Rojda said to Bill in  $WORLD(i)$  [  $[\alpha]^{c,j}$  ]  
 c.  $[[OP_V [I you-to angry.be]]]^{c,j} = [[I you-to angry.be]]^{j,j=1}$  iff.  $AUTH(j)$  is angry at  $ADDR(j)$  in  $WORLD(j)$ .  
 d.  $[[I you-to angry.be]]^{c,j} = 1$  iff.  $AUTH(c)$  is angry at  $ADDR(c)$  in  $WORLD(j)$ .

Depending on whether the complement contains an  $OP_V$  or not the indexicals will or won’t shift; but as both the 1st and 2nd person coordinates of the context are overwritten, both of them will shift if one shifts.

This system also predicts NO INTERVENING BINDER, since once the context is overwritten, the pre-overwriting values are unrecoverable. Let me schematize this a bit based on the Zazaki example *Ali said to me that Hesen said to you that I am Rojda’s brother.*. First, consider the case where *you* shifts. Then there must be a shifting operator in the CP below *Ali said*.

- (330) Ali to me said [ $CP_1$   $OP_V$  Hesen to you said [I am Rojda’s brother]].

But this operator serves to erase the values of the context inherited from the speech-act, and hence the lower *I* cannot refer to the speaker. Now consider the case where *you* doesn’t shift. Recall that here the lower *I* cannot refer to Ali. As *you* doesn’t shift, there can be no operator in  $CP_1$ . But the only way the embedded *I* can refer to Ali is by there being such an operator there. Thus, this reading is blocked as well.

This system can thus handle Zazaki perfectly. What about the other cases in the typology? I will assume that there is a family of operators, of which  $OP_V$  is only the most famous (since it seems

to be otherwise necessary pragmatically). In particular, I will assume the following additional operators:

- (331) a.  $[[OP_{auth} \alpha]^{c,i}] = [[\alpha]^{j,i}]$ , where  $j = \langle AUTH(i), ADDR(c), TIME(c), WORLD(c) \rangle$ .  
 b.  $[[OP_{per} \alpha]^{c,i}] = [[\alpha]^{j,i}]$ , where  $j = \langle AUTH(i), ADDR(i), TIME(c), WORLD(c) \rangle$ .

$OP_{auth}$  diagonalizes only over the author coordinate, thus shifting only 1st person indexicals.  $OP_{per}$  diagonalizes only over the 1st person and 2nd person coordinates. These two operators, in conjunction with  $OP_{\forall}$ , can allow us to derive the typology:

(332) Cross-linguistic variation

	VERB	LEXICAL ENTRIES	CLASS DESCRIPTION
<b>AMHARIC, AGHEM</b>	SAY	[say ( $OP_{per}$ )]	optionally shifts 1st/2nd-per indexicals
<b>NAVAJO</b>	SAY	[say ( $OP_{per}$ )]	optionally shifts 1st/2nd-per indexicals
<b>SLAVE</b>	TELL	[tell ( $OP_{per}$ )]	optionally shifts 1st/2nd indexicals
	WANT	[want ( $OP_{auth}$ )]	optionally shifts 1st-per indexicals
	SAY	[say ( $OP_{auth}$ )]	obligatorily shifts 1st-per indexicals
<b>ZAZAKI</b>	SAY	[say ( $OP_{\forall}$ )]	optionally shifts all indexicals
<b>ENGLISH</b>	ALL	[att-verb]	no indexical shift

This table amounts to a translation of the diacritics I introduced in the last section for von Stechow's theory. Optionality is handled via subcategorization: all the predicates encountered – save Slave 'say' – optionally subcategorize for a shifting operator. Which operator is subcategorized for depends on the verb, hence the distinction between the 'want'/'say' class and 'tell' in Slave. It should be important to note that, as with the diacritics above, I have not derived the cross-linguistic typology, simply captured it within this theory. As it stands, the theory has very few constraints on subcategorization, even though, as mentioned above, almost all of the predicates are verbs of speech. Similarly, it seems rather natural that 'tell' would shift 2nd person while 'want' would not; indeed, what would such a shift mean, given that it is unclear how the ADDR coordinate would even be filled in such cases. My hope is to reduce this arbitrariness to principles of lexical semantics in the future. However, more work is necessary to determine what sorts of generalizations need to be captured (I will argue in Chapter 3 that Mandarin *ziji* is likewise a shifted indexical, in which case the restriction to verbs of speech seems untrue). For example, many people have pointed out to me the gaps for  $OP_{addr}$ , or  $OP_{temp}$ . While I acknowledge that this is the state of our current knowledge, I would not want to make any bets regarding what we might discover; after all, for over 100 years people believed there were no shifting indexicals.

### 2.6.3 On ambiguity theories

Before continuing, I would like to make one more observation regarding a consequence of the data presented above and the theory I have just outlined. A common reaction to instances of indexical shift is to posit a systematic ambiguity in indexical shifting languages between indexicals and logophoric items (e.g., Higginbotham (2003) and Safir (2005)). Such theories are localist in the same way as quotative and under-specification theories are, and hence would not predict the

rather striking facts of NO INTERVENING BINDER, nor obligatory shifting under ‘say’ in Slave.<sup>44</sup> However, in assimilating indexical shift to logophors, I would like to point out that such proposals run the risk of also predicting that shifted indexicals show the *De Re* Blocking Effect I argued holds for dream-report *de se* elements and Yoruba logophors on virtue of the syntactic structure. In point of fact, this does not hold for shifted indexicals:

- (333) At a friend’s party, Hesen is shocked to see Ali, the boyfriend of his good friend Rojda, flirting with a woman in a big red dress and hat that obscures her face. After seeing her kiss Ali, Hesen rushes off to find Rojda. When he finds her, he tells her, “The woman in the big red dress kissed your man.” Of course, it was Rojda all along, only hidden under a costume!

Heseni va kɛ Rojdaa layik tIya pach kerd  
 Hesen.OBL said that Rojda.OBL boy your kiss did

‘Hesen said (to Rojda<sub>i</sub>) that Rojda<sub>i</sub> kissed her<sub>i</sub> man.’

The *de re* interpreted name does not block the shifted indexical. This is as expected, given that indexical shift is not mediated by syntactic binding in this framework, and hence not subject to intervention effects.<sup>45</sup> I take this fact to suggest that the two should thus be kept apart.

## 2.6.4 Recasting this with multi-indexing

For expository purposes, I have presented the context-shifting system within a double-indexed theory. However, recall that there is evidence from the interpretation of temporal and modal items that suggests either quantification over such items in the object language or a multi-indexed theory. However, it is possible to translate the operators directly into an extensional system without trouble:

- (334)  $[[OP_V]^{c,g} = \lambda\chi_{\kappa\kappa t} \lambda i_{\kappa} \cdot \chi(i)(i).$

Under this characterization,  $OP_V$  can only appear adjacent to a index binder, i.e. at the root level of a proposition. It then applies by Monstrous Function Application to yield the diagonal proposition. We may also translate the operator into an expressively-equivalent multi-indexed logic, where instead of one index we have a stack of indices, the highest being that of the most local intensional context:

- (335)  $[[OP_V \alpha]^{c,I,g} = [[\alpha]]^{TOP(I),I,g}$ , where  $TOP(I)$  is the highest index  $i_n$  in the stack.

<sup>44</sup>Ken Safir (p.c.) has put this another way: Why do indexical-looking logophors have the distributional restrictions that logophors do not? What is unclear to me is what indexical-looking means here. Let me suppose it means phonologically identical to an element that outside of attitude contexts is uniformly interpreted as dependent on the speech context. In Chapter 3, I will discuss long-distance anaphora in Malayalam and Icelandic, neither of which qualify under this generalization. While both obey NO INTERVENING BINDER, Malayalam *taan* does not show sensitivity to the *De Re* Blocking Effect.

<sup>45</sup>Note that under von Stechow’s theory this is also predicted, given that *Rojda* and *you* do not match in person features, thus precluding binding.



- (338) John sees on TV a candidate he likes a great deal, and says, “I think he’s great!” Unbeknownst to John, he is talking about himself.

John jigna nə-w                      alɛ  
 John hero be.PRES-3smO say.PERF.3sm

‘John said that he is a hero.’

Schlenker proposes that this effect falls out naturally from a presuppositional approach to person features, coupled with a restriction that 3rd person pronouns bear negative features, which is semantically null but subject to conditions on presupposition maximization:

- (339) AVOID NEGATIVE FEATURES

“A negative feature can appear in logical form only if the corresponding positive feature would have yielded a presupposition failure.” (Schlenker, 2003, p. 112)

This, Schlenker argues, is what occurs in non-shifting environments generally: the speaker refers to himself with *I* unless the presupposition associated with [+author\*(*x*)] (namely, that the referent is the speaker) is not common ground in the discourse, that is, in non-*de se* contexts such as not recognizing one’s reflection. The same analysis holds with respect to Amharic *I*’s person feature: [+author(*x*, *c<sub>i</sub>*)]. As long as the referent of *x* is not presupposed to be the attitude-holder’s *de se* alternative in each compatible index, [-author(*x*, *c<sub>i</sub>*)] is allowed, and this feature is morphologically spelled out as the 3rd person.

However, the obviation restriction does not hold in Zazaki. Thus, recall the examples which showed shifting of temporal and locative indexicals, repeated below, here with unambiguous *de se* scenarios:

- (340) Heseni says in Diyarbekir, “I was born here.”

Waxto kɛ ma Diyarbekir-de bime, Heseni<sub>i</sub> mi-ra va kɛ o<sub>i/j</sub> ita ame dina  
 When that we D.-at were, Heseni.OBL me-at said that he here came world

‘When we were in Diyarbekir, Heseni<sub>i</sub> told me he<sub>i/j</sub> was born {here, in Diyarbekir}.’  
 (Anand and Nevins, 2004)

- (341) Heseni says one week ago, “I kissed Rojda yesterday.”

Hefte nayeraraver, Heseni<sub>i</sub> mi-ra va kɛ o<sub>i/j</sub> vizeri Rojda paci kerd.  
 week ago, H.OBL me-at said that he yesterday Rojda kiss did

‘A week ago, Heseni<sub>i</sub> told me that he<sub>i/j</sub> kissed Rojda {8 days ago, #yesterday}.’ (Anand and Nevins, 2004)

In (340), ‘here’ shifts, while the reported author is expressed with a 3rd person pronoun; the same situation holds in (341) with respect to ‘yesterday.’ This is a general property of Zazaki report environments – below are two examples, first, one where the 2nd person shifts while the 1st person indexical is reported with a 3rd person pronoun, and, perhaps more surprisingly, one where

of two 1st person indexicals in the original utterance, one is faithfully reported while the other is expressed in the 3rd person:<sup>47</sup>

- (342) a. S: Rojda says to Ali, “I kissed your brother.”  
 Rojda Ali-ra va kɛ æ braye tiya pace kerda  
 Rojda Ali-to said that she brother your kiss do-PERF  
 ‘Rojda<sub>i</sub> said to Ali<sub>k</sub> she<sub>i/j</sub> kissed your<sub>k/ADDR(c\*)</sub> sister.’
- b. (??) S: Rojda says to Ali, “My brother kissed me.”  
 Rojda Ali-ra va kɛ braye mæe pace kerd  
 Rojda Ali-to said that brother my she kiss did  
 ‘Rojda<sub>i</sub> said to Ali<sub>k</sub> her<sub>i</sub> brother kissed her<sub>i/j</sub>.’

This puzzle cannot be reduced to the optionality of shifting, since in all of the above cases, the indexicals within the clause shift. Nor can one argue that this is an instance of a temporal, locative, or 2nd person shifter (however this might be defined in Schlenker’s theory), since if they were present in Zazaki, we would not expect NO INTERVENING BINDER to hold across the sortal domains for the indexicals.

Such examples thus pose a real puzzle for an account of the obviation effects in terms of a presuppositional competition effect. One might see in this data evidence that AVOID NEGATIVE FEATURES is not cross-linguistically respected. However, note that the contrast Sauerland et al. (2005) note for English plurals is also replicated in Zazaki:

- (343) a. mar Cɛnɛkɛ miri daɛ-rɛ Sanikɛ vate  
 every girl parent her-to story tell.PERF  
 ‘Every girl told her parent a story.’ implicates: one parent per girl
- b. mar Cɛnɛkɛ mire daɛ-rɛ Sanikɛ vate  
 every girl parent.PL her-to story tell.PERF  
 ‘Every girl told her parents a story.’ no implication

Thus, it appears that the violation of AVOID NEGATIVE FEATURES is only true for person features. I would like to once again to move the focus from pronominal competition to the attitude verb. Recall that in Chapter 1, I observed the same contrast between dream-report and Abe logophors and Yoruba logophors; the latter language was like Zazaki in allowing weak pronouns to have either *de se* or *de re* reference even in the presence of a logophoric strong pronoun. I suggested that what actually was at fault for the English and Abe cases was the relevant attitude predicate, which specified that no pronoun could be interpreted *de re* with respect to the SELF relation. I think the same is going on in the case of Amharic, Navajo, and Slave: the shifting attitude predicates themselves disallow *de se* pronouns in their complements, not a competition effect between a dedicated *de se* form and an ambiguous form. If the blame for these obviation facts is based in the predicate, then we expect (as seen in Slave) that it is possible to find lexical idiosyncrasy within a language. In Chapter 3, I will discuss the only case of this I know of: the

<sup>47</sup>The latter sentence is, admittedly, dispreferred by speakers to one with two shifted 1st person forms.

Mandarin directional *qu* ‘go’, which functioning as a rationale clause complementizer, prohibits anything within its scope from being interpreted *de se*.

## 2.7 Some Problematic Data

In this final section of the chapter, I would like to point out two data sets that are problematic for the account I have presented above. The first are cases of indexical shift in Slave that do not appear to obey NO INTERVENING BINDER. The second set, from Catalan Sign Language (Quer, 2005), does not appear to obey SHIFT TOGETHER. I offer no solutions, only a catalog of some issues that arise based on this preliminary data.

### 2.7.1 Slave violates NO INTERVENING BINDER

The context-overwriting analysis I presented above was argued to generalize to all the languages I considered, including Slave. Although I demonstrated that SHIFT TOGETHER holds in Slave, I did not present data showing that the more general NO INTERVENING BINDER holds. Sam Cummins (p.c.) has pointed out that Rice (1986) in fact has two pertinent test cases which show clear NO INTERVENING BINDER violations.<sup>48</sup> The first one is *That man wants that I will know if I will sell my kicker*.<sup>49</sup> Now, under the drill I extensively followed above, the question is whether when the first *I* shifts, the lower *I*'s can unshift. Indeed, they can, and in fact must:

- (344) ?eyi dene se esasóné ?ónéduh?â kegoduhshá yenjwę  
 that man 1.sg. kicker 1.sg.-will-sell 1.s.g-will-know 3.s.g-want  
 ‘That man wants to know if I’ll sell my kicker.’ (Rice, 1986, p. 64, ex. 86)  
 \*‘That man wants to know if he’ll sell {my, his} kicker.’ (Keren Rice, p.c.)  
 \*‘That man wants to know if I’ll sell his kicker.’ (Keren Rice, p.c.)

Note, though, that to the extent the indexicals “unshift,” they must unSHIFT-TOGETHER: thus in (344), the seller and the boat-owner must both be AUTH(c@), the actual speaker. This in itself is a problem for pronoun-centric views of indexical shift, as already discussed. How might we deal with this apparent instance of unshifting? Rice herself argues that unshifting is a property of “indirect discourse” verbs such as *know*, which force indexicals within their scope to be dependent on the matrix context.<sup>50</sup> The data in (344) may thus be seen as preliminary evidence that the generalized diagonalizing operators considered above might actually have a place in indexical shift (as Sam Cummins (p.c.) pointed out to me, the data here is compatible with several kinds of unshifting):

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<sup>48</sup>I am indebted to Sam Cummins for both pointing out this data point and discussion regarding potential analyses. Cummins proposes that unshifting is obtained by removing items from the index stack (via the pop primitive of the data structure), in particular, the want attitude event in the example below. This makes the interesting prediction that the event thus cannot serve as a discourse referent for subsequent anaphora; Keren Rice (p.c.) suggests that this is not correct, although explicit testing is necessary.

<sup>49</sup>Keren Rice (p.c.) informs me that a ‘kicker’ is a small outboard motor boat.

<sup>50</sup>It is interesting to note that the verb in question is factive. This may be relevant.

(345)  $[[OP_V^0 \alpha]^{c,I,g} = [\alpha]^{I[0],I,g}$ , where  $I[0] = i_0 = c@$  (the last by convention).

The logic of this approach thus predicts that verbs may be of several different types: shifting (overwriting by the highest index), unshifting (overwriting by a lower index), and non-shifting (no overwriting at all). (Rice, 1986) claims that in Slave the verbs divide into shifters (“direct discourse”) and unshifters (“indirect discourse”), but Keren Rice (p.c.) informs me that she did not test all indirect discourse verbs on multiple embedding. This is clearly an interesting avenue for future exploration.<sup>51</sup>

Rice (1986) presents an additional case that seems to indicate unshifting behavior, a case of a relative clause containing a non-indexical pronoun co-referent with the attitude holder; that is, a case of Zazaki-like obviation disobedience:

(346) John se-no t'iere ghḡ ?ainwḡ i gháyudá yenjwḡ  
 John 1.sg.-mother the girl 3.sg.-like REL 3.sg.-will-see 3.sg.-want  
 ‘John<sub>i</sub> wants his<sub>i</sub> mother to meet the girl he<sub>i/j</sub> loves.’ (Rice, 1986, p. 64, ex. 87)

Frankly, I am not certain how to analyze this example (Rice suggests that the domain of direct discourse is syntactically constrained). Keren Rice (p.c.) informs me that this example was presented in a scenario where the girl is interpreted *de re*. This may have an effect on obviation; more data on how relative clauses in Slave are interpreted is required. This kind of effect does not seem to be present in Amharic or Zazaki. Peggy Speas (p.c.) doubts that it holds in Navajo. If this is true, then it is a remarkable fact about Slave that definitely requires further study.

## 2.7.2 Catalan Sign Language does not obey SHIFT TOGETHER

Quer (2005) recently discovered more troubling data for the context-shifting account in Catalan Sign Language (LSC). Signed languages have an interesting phenomenon known as *role shift* (RS), whereby a speaker employs a range of non-manual markings (including body shift, gaze shift, head tilt, facial affect) in order to present an attitude from the perspective of another sentient being (see (Lillo-Martin, 1995; Poulin and Miller, 1995; Engberg-Pedersen, 1995; Lee et al., 1997; Zucchi, 2004) for characterization). While role shift has generally be consigned to a form of direct discourse (though see (Zucchi, 2004), Quer shows that in LSC, NOW and YEAR THIS do not shift in RS clauses, in the presence of a shifting 1st person:

(347) a. \_\_\_\_\_ t \_\_\_\_\_ RS-i  
 LAST-YEAR JOAN THINK IX-1 STUDY FINISH NOW  
 last year Joan think I study finish now  
 ‘Last year, Joan thought he would finish his studies {now, #last year}.’ (Quer, 2005, ex. 25)

b. \_\_\_\_\_ t \_\_\_\_\_ RS-i

<sup>51</sup>This may also serve as a choice-point between the verbal quantifier approach and the context-overwriting approach. Indeed, I am not sure how von Stechow’s system can be extended to deal with these facts.



LAST-YEAR JOAN IX-3 THINK IX-1 STUDY FINISH YEAR THIS#  
 last year Joan he think I study finish year this

‘Last year, Joan thought he would finish his studies {this year, #last year}.’ (Quer, 2005, ex. 26)

However, Quer also points out cases where the same lexical item HERE, can but need not shift, even when there is a 1st person shift:

(348) a. \_\_\_\_\_ t \_\_\_\_\_ RS-i

IXa MADRID MOMENT JOAN THINK IX-1 STUDY FINISH HERE  
 he Madrid time Joan think I study finish here

‘When he was in Madrid, Joan thought he would finish his studies in Barcelona.’  
 (Quer, 2005, ex. 23)

b. \_\_\_\_\_ t \_\_\_\_\_ RS-i

IXa MADRID JOAN THINK IX-1 STUDY FINISH HERE MADRID  
 he Madrid Joan think I study finish here Madrid

‘When he was in Madrid, Joan thought he would finish his studies in Madrid.’ (Quer, 2005, ex. 24)

Assuming that HERE is in fact an indexical, the fact that it can shift with IX-1 but need not is a violation of SHIFT TOGETHER. Finally, Quer presents one more potential counterexample:

(349) \_\_\_\_\_ t \_\_\_\_\_ RS-i

ANNA<sub>i</sub> IX-3 3-TELL-2<sub>j</sub> TWO-OF-US<sub>{i+j,i+k}</sub> WIN AT-LAST  
 Anna she 3S-tell-2O 1st.dual win at last

‘Anna told you that the two of you had won at last.’ (Quer, 2005, ex. 22)

The element TWO-OF-US is a dual, containing both the speaker and the hearer of some speech context. Quer notes that the pronoun is “ambiguous between the actual addressee of the utterance of the reported addressee” (Quer, 2005, p. 7) Frankly, it is unclear what this means for this example, since the reported addressee is the matrix addressee. I assume, however, that were the object not the 2nd person (say another 3rd person, Bill), two interpretations would be available: Anna+Bill and Anna+you. If this is true, then it is another violation of SHIFT TOGETHER. It would be quite interesting to discover exactly what kind of acquaintance relation Anna would have to have to the matrix addressee in order to use the dual in this case.

Finally, Quer, in discussion of the non-shifting NOW and YEAR THIS, states that “not all temporal and locative indexicals...permit shifted reference[.]” (Quer, 2005, p. 10) but he offers no cases of temporals that do shift nor locatives that do not. If these do exist, then it validates a key claim of Schlenker’s localism, namely, that two indexicals that depend on the same parameter may show differential shifting behavior; my system as it stands cannot handle this. However, in Chapter 3, I will show that the Mandarin 1st and 2nd person indexicals likewise are not shiftable. I will propose that indexical pronouns can make claims on their shiftability, namely, whether they can or

cannot (or must) appear in the scope of a shifting operator. However, it is important to note that this is an additional stipulative component of the theory, which does not otherwise predict such facts.<sup>52</sup>

As for the remainder of the puzzles, I have nothing to offer as way of analysis for these examples, given my general ignorance of RS; hopefully future work will shed light on how these data may best be analyzed. Diane Lillio-Martin and Regiane Quadros (p.c.) inform me that the SHIFT TOGETHER violating forms in LSC are ungrammatical in both ASL and LIBRAS, so it is important to conduct work on LSC itself.

## 2.8 Conclusion

In this chapter, I have investigated the properties of indexical shift in several languages, especially Amharic and Zazaki. I have demonstrated that indexical shift is subject to global constraints on interpretation, SHIFT TOGETHER and NO INTERVENING BINDER. I have argued that these properties are not naturally captured by localist accounts, including cases of mixed quotation, ambiguity of form, and context variable binding. I demonstrated how a verbal quantifier approach could be extended to explain the facts, but argued that such moves do not derive the constraints on indexical shift, merely explain it. I instead motivated an approach based on context-overwriting, which captures these facts immediately. This approach crucially made use of diagonalizing operators, and thus forces us to abandon Kaplan's Prohibition Against Monsters.

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<sup>52</sup>There is, in addition, differential behavior between the Mandarin pronouns and NOW or YEAR THIS, in that in Mandarin such structures are rendered ungrammatical, while in LSC the sentences are acceptable. I have no explanation for this, although I note in Chapter 3 that a subset of my Mandarin informants allow 1st/2nd elements within DPs to scope out of the offending clause at LF, in a similar spirit to Hardt's approach to the ORC. Perhaps this is what is at work in LSC as well. I would, however, like to see either syntactic or semantic evidence for such scope-taking before committing to it.

# Chapter 3

## On the landscape of long-distance anaphora

### 3.1 Introduction

In the last chapter, I argued that the locus of indexical shift is the attitude verb, allowing us to capture both the within-language variation of indexical shift displayed in Slave and the NO INTERVENING BINDER constraint. Within this penumbra I considered two proposals in detail – von Stechow’s verbal quantifier approach and Anand and Nevins’ context-overwriting approach. While the verbal quantifier approach did not directly capture NO INTERVENING BINDER, I suggested that with the addition of unselective binding to the theory, the same facts could be explained, in which case the two approaches would be expressively equivalent. However, I argued that the verbal quantifier approach was forced to stipulate several conditions that the context-overwriting approach obtained for free.

In this chapter, I would like to argue that there is a place for unselective *de se* binders in a theory natural language, based on the behavior of Mandarin long-distance *ziji*. The discussion will focus on a series of divergences in judgment between speakers of Mandarin on range of long-distance binding tests, including the following test for the *De Re* Blocking Effect:<sup>1</sup>

(350) John thinks, “Bill told me that Mary likes me.”

John<sub>i</sub> renwei Bill gaosu ta<sub>i</sub> Mary xihuan ziji<sub>i</sub>  
John think Bill tell him Mary like self

‘John<sub>i</sub> thinks that Bill told him<sub>i</sub> that Mary likes him<sub>i</sub>.’ [\* LOG-Mandarin, ✓ IND-Mandarin]

This example divides speakers into two sets – those who consider it grammatical (13 speakers of IND-Mandarin) and those who consider it ungrammatical (16 speakers of LOG-Mandarin). As the names suggest, I will argue that there are in fact *two* different grammars for long-distance *ziji*: one where it is bound overtly in the syntax, on par with how logophors were treated in Chapter 1, and another where it is a shiftable indexical like Zazaki or Amharic *I*, and hence not subject to

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<sup>1</sup>The judgments come from consultation of 29 subjects, all of whom are native speakers from Taipei who have moved to Boston within the past three years for schooling.

the *De Re* Blocking Effect. As expected, IND-Mandarin *ziji* respects NO INTERVENING BINDER. However, the same is true for LOG-Mandarin, in contrast to the behavior of logophoric pronouns in Yoruba. This conjunction of *De Re* Blocking and NO INTERVENING BINDER is precisely what is predicted by a theory with unselective *de se* binders, and thus I will that this is precisely what constrains LOG-Mandarin. I will then demonstrate how the division between these two classes of speakers can explain a series of very subtle differences in interpretation with respect to the infamous Blocking Effect, the licensing of discourse-dependent readings for *ziji*, and cases where one group allows long-distance binding while the other does not.

Here is how I will proceed. In section 1, I will lay out the case for treating long-distance *ziji* as a shifting indexical, based on its *de se* interpretation, obeying NO INTERVENING BINDER, and 1st person reading when unbound; this section will conclude with my characterization of the Blocking Effect as a case of POLARITY, forbidding the Mandarin 1st and 2nd person indexicals from the scope of a shifting operator. Section 2 will begin with the central puzzle for a shifting approach, namely that 16 speakers show sensitivity to binding competition à la the *De Re* Blocking Effect. I will then proceed, largely following Anand and Hsieh (2005), to demonstrate how analyzing these LOG-Mandarin speakers' *ziji* as a syntactically bound *de se* anaphor can explain a systematic series of environments where long-distance binding is unavailable, including the ever-loved case of dream reports. In contrast, I will show that IND-Mandarin speakers are far more permissive in these environments, as expected if the culprit for LDR blocking were binding competition.

In section 4, I will conclude with a discussion of the open areas within the present proposal, including issues of typological generalization, the characterization of long-distance anaphora in extensional contexts, and the notion of point-of-view. I will also widen the empirical net to briefly consider three additional languages with long-distance anaphora. I will first consider Malayalam, which obeys all of the constraints I diagnosed for IND-speaker Mandarin, and thus I argue is also an instance of indexical shift. I will then turn to Icelandic and Japanese, which obey both the LOGOPHOR BLOCKING EFFECT and NO INTERVENING BINDER, and thus are of a type with LOG-speaker Mandarin.

## 3.2 The case for *ziji* as a shifting indexical

### 3.2.1 A *ziji* Primer

Like English reflexives, Mandarin *ziji* can be locally bound (i.e. within the smallest clause containing a subject):

(351) John hit himself.

(352) John da-le ziji  
 John hit-PERF self  
 'John hit himself.'

However, *ziji*, like many monomorphemic reflexives, can be bound outside of *himself*'s governing category – that is “long-distance.”

- (353) John<sub>i</sub> zhidao Bill<sub>j</sub> renwei Mary zuo zai ziji<sub>i/j</sub> de pangbian  
 John know Bill think Mary sit at self DE side  
 ‘John<sub>i</sub> knows that Bill thinks that Mary sat right next to him<sub>i/j</sub>.’

Crucially, when it is long-distance bound, *ziji* shows only sloppy identity readings, in contrast to the pronoun *ta*:

- (354) a. Zhangsan<sub>i</sub> shuo Lisi changchang kuidai ziji<sub>i</sub>; Wangwu ye yiyang  
 Zhangsan say Lisi always mistreat self; Wangwu also the same  
 ‘Zhangsan<sub>i</sub> says that Lisi always mistreats him<sub>i</sub>; so does Wangwu<sub>j</sub> [say Lisi always mistreats him<sub>j</sub>].’ (Cole et al., 2001a)
- b. Zhangsan<sub>i</sub> shuo Lisi changchang kuidai ta<sub>i</sub>; Wangwu ye yiyang  
 Zhangsan say Lisi always mistreat him; Wangwu also the same  
 ‘Zhangsan<sub>i</sub> says that Lisi always mistreats him<sub>i</sub>; so does Wangwu<sub>j</sub> [say Lisi always mistreats him<sub>i/j</sub>].’ (Cole et al., 2001a)

Thus, if the lack of strict identity is any guide (Reinhart, 1983), long-distance *ziji* is not a pronoun. But then what can it be, given that its governing category appears to be the whole sentence?

What I have sketched here is the basic puzzle of long-distance anaphora, acknowledged at least as early as Faltz (1977) and Thráinsson (1976): how does one handle an apparent anaphor that does not seem to obey Condition A of the binding theory? There have been, broadly speaking, two approaches to this problem. The first has been to assimilate long-distance dependencies to local dependencies via movement (Pica, 1985; Battistella, 1989; Cole et al., 1990b; Huang and Tang, 1991; Li, 1993) or by an expansion of the governing category (Yang, 1983; Manzini and Wexler, 1987; Progovac, 1993); these are thus syntactic explanations for long-distance binding. The second approach has been to argue that long-distance binding is essentially a semantico-pragmatic phenomenon, which is the result of assigning certain discourse roles to elements (Sells, 1987; Iida, 1992; Pan, 1997; Oshima, 2004). My proposal will be that *both* methods are attested, though arguably for different languages, and that these methods take the form of operator binding as in Chapter 1 and context-overwriting as in Chapter 2. First though, it is important to get squared away on the distribution of *ziji*.

### Obligatory *de se* interpretation

I will propose that long-distance *ziji* binding is semantically determined, specifically, by two methods of *de se* anaphoric reference considered in chapters 1 and 2. The core motivation for this link comes from Pan (1997), who demonstrates that long-distance bound *ziji* must be interpreted *de se*:

- (355) S<sub>1</sub>: Zhangsan says, “That thief stole my purse!”  
 S<sub>2</sub>: Zhangsan says, “That thief stole that purse!” (can’t see that it was *his* purse).
- Zhangsan shuo pashou tou-le ziji-de pibao  
 Zhangsan say pickpocket steal-PERF self-DE purse

‘Zhangsan said that the pickpocket stole his purse.’ [ $\checkmark$ S<sub>1</sub>, #S<sub>2</sub>] (Huang and Liu, 2001)

This finding, parallel to the finding for *proprio* in (Chierchia, 1989), has been met with some criticism. First, as noted by Huang and Tang (1991), *ziji* may be bound long-distance inside a relative clause:

- (356) S: [From Chapter 1’s Diving Scenario]: Zhangsan is watching the video of the dives with some acquaintances. He likes one diver the best, but notices some people in the back snickering at the diver’s form. He leans over and tells his neighbor, “I don’t like those people who criticized that diver.” Unbeknownst to him, he is that diver.

Zhangsan bu xihuan [neixie [e<sub>j</sub> piping ziji<sub>i</sub>] de ren<sub>j</sub>  
Zhangsan NEG like [those [e<sub>j</sub> criticize self DE person

‘Zhangsan<sub>i</sub> does not like those people who criticize him<sub>i</sub>.’ (Huang and Tang, 1991) [ $\checkmark$ S]

As indicated above, this sentence is acceptable even if Zhangsan does not know that he is speaking about himself. Pollard and Xue (2001) take such examples to invalidate Pan’s claim. But note that there is no attitude predicate in (356), thus making issues of *de se* interpretation moot – Pan’s generalization should thus be that in intensional contexts *ziji* is interpreted *de se*. Having noted this fact, I will banish discussion of relative clause *ziji* until section 4. However, Cole et al. (2001b) present two cases with attitude verbs where they argue that *de se* interpretation does not arise. Their first source of evidence comes from the fact that *ziji* is acceptable underneath the verbs *wangji* ‘forget’ and *bu xiao* ‘not be aware’:<sup>2</sup>

- (357) Zhangsan wangji-le Lisi hen taoyan ziji de gege  
Zhangsan forget-PERF Lisi very hate self DE brother  
‘Zhangsan<sub>i</sub> forgot that Lisi hates his<sub>i</sub> brother.’ (Cole et al., 2001b, p. 4, ex. 3)

- (358) Zhangsan bu xiao de Lisi hen taoyan ziji  
Zhangsan NEG aware DE Lisi very hate self  
‘Zhangsan<sub>i</sub> was not aware that Lisi hates him<sub>i</sub>.’ (Cole et al., 2001b, p. 4, ex. 4)

Cole et al. state that these are not *de se* since in both cases the sentences do not “report on the state of the world as pictured in the mind of the matrix subject.” (Cole et al., 2001b, p. 4) However, testing for *de se* yields the expected result – if Zhangsan has a *de re* belief about Lisi hating him, (358) is appropriate (in contrast to what might be expected if it were simply a *de re* claim, but not if he has a *de se* belief:

- (359) S<sub>1</sub>: Zhangsan thinks, “Lisi hates that guy [who dove last].” Unbeknownst to him, the last diver is him.  
S<sub>1</sub>: Zhangsan thinks, “Lisi hates me [the last diver].”

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<sup>2</sup>Cole et al. (2001b) translate these sentences as double-access, which is the most plausible reading, but not the sole one (assuming that Lisi changes his mind at some point); this is presumably pragmatic.

Zhangsan bu xiao de Lisi hen taoyan ziji  
 Zhangsan NEG aware DE Lisi very hate self

‘Zhangsan<sub>i</sub> was not aware that Lisi hates him<sub>i</sub>.’ [✓S<sub>1</sub>, #S<sub>2</sub>]

This is precisely what is expected if *ziji* forces a *de se* interpretation. The confound in these examples presumably comes from the factives’ projected presupposition, which, being non-intensional, has no *de se*/non-*de se* component. Thus, (358) can be schematically represented as *Zhangsan<sub>i</sub> did not think that Lisi hates him<sub>i+de se</sub> and ∂(Lisi hates him<sub>i</sub>)*.

Cole et al. have one more argument, which I think is quite serious:<sup>3</sup>

(360) S: Zhangsan says, “please reward that child [which is actually his].”

Zhangsan qing laoban jianshang ziji<sub>i</sub> de haizi  
 Zhangsan ask laoban jiangshan ziji DE child

‘Zhangsan<sub>i</sub> asked that the owner reward his<sub>i</sub> own child.’ (Cole et al., 2001b, p. 10, ex. 19)  
 [✓S]

They remark that this sentence is acceptable in the *de re* context of S; my informants report that this is true, albeit marginally. Importantly, this appears to be a peculiar property of *qing*; other verbs I have tested do not show this apparent allowance of a non-*de se* reading of *ziji*.<sup>4</sup> I do not know why this should be. However, I would like to note that this is once more an apparent fact about the attitude verb in question, which, following the logic of Chapters 1 & 2, may subcategorize for an appropriate operator or not. Unfortunately, given the theories of indexical shift and logophoric binding in the preceding chapters, this would predict that *ziji* cannot be long-distance bound by Zhangsan, contrary to fact. I leave this problem to future research.<sup>5</sup> Thus, aside from the case of complements of *qing*, long-distance *ziji* must be interpreted *de se*.

It should be noted that this requirement of long-distance *ziji* immediately derives that it should be (in general) subject-oriented, since the attitude holder of most predicates is the subject:

(361) Wangwu<sub>i</sub> dui Zhangsan<sub>j</sub> shuo Lisi<sub>k</sub> chang piping ziji<sub>i/\*j/k</sub>  
 Wangwu to Zhangsan say Lisi often criticize self

‘Wangwu<sub>i</sub> said to Zhangsan<sub>j</sub> that Lisi<sub>k</sub> often criticizes him<sub>i/\*j/k</sub>.’

However, the attitude holder need not c-command *ziji* in order for long-distance binding to occur:

<sup>3</sup>As indicated, this is translated as a finite complement. However, it is clearly a case of object control, since it cannot be used if Zhangsan says (to the owner, or someone else), “The owner should reward that child/my child.” Thus, a better translation should be ‘Zhangsan<sub>i</sub> asked the owner to reward his<sub>i</sub> child.’

<sup>4</sup>The verbs tested are: *shuo* ‘say’, *gaosu* ‘tell’, *wen* ‘ask (question-embedding)’, *yao* ‘want’, *xu yao* ‘need’, *xiwang* ‘hope’, *xiang yao* ‘desire’, *jueding* ‘decide’, *qiwang* ‘expect’, *qidai* ‘look forward to’, *xiangxin* ‘believe’, *renwei* ‘think’, *kaolu* ‘consider’, *jue-de* ‘feel’, *huaiyi* ‘suspect’, *fajue* ‘discover’, *faxian* ‘find out’, and *zhidao* ‘know’.

<sup>5</sup>One potential line of explanation would be to assimilate the case of *qing* to instances like the relative clause cases.

- (362) Zhangsan kuajiang ziji<sub>j</sub> xia-le      Lisi<sub>j</sub> yi tiao  
 Zhangsan praise self scare-PERF Lisi one jump  
 ‘That Zhangsan praised him<sub>j</sub> greatly surprised Lisi<sub>j</sub>.’ (Huang and Liu, 2001)

I take examples such as this to indicate that long-distance binding is not a relation between the antecedent and *ziji*, but between the attitude verb and *ziji*; this fact is in consonance with the consideration of shifted indexicals and logophors from the previous chapters. One more extremely suggestive fact is that when *ziji* does not have an antecedent in the sentence, it may refer to the speaker (Li, 1991), a reading that has been called “discourse-dependent” or “logophoric”:

- (363) lingdao de biao yang    dui ziji shi yi-ge bianche  
 leader DE compliment to self COP one-CL impetus  
 ‘The leader’s compliment was an encouragement to me.’ (Pollard and Xue, 2001)

Note that this “discourse-dependent” interpretation is also available when *ziji* is in an intensional environment, suggesting that it is not a property that arises when *ziji* is not bindable:

- (364) John<sub>i</sub> shuo Bill<sub>k</sub> chang piping ziji<sub>i/U</sub>  
 John say Bill often criticize self  
 ‘John<sub>i</sub> said that Bill<sub>k</sub> often criticized {him<sub>i</sub>, me}.’

Rather, long-distance *ziji* looks rather suspiciously like a shifted 1st person indexical. In the following subsection, I will show that it likewise obeys NO INTERVENING BINDER.

### ***ziji* Obeys NO INTERVENING BINDER**

I will start from the fact discovered by Pan (1997) that clausemate long-distance *ziji*s must co-refer (I do not gloss the cases of short-distance binding for reasons of space):<sup>6</sup>

- (365) Zhangsan renwei Lisi zhidao Wangwu ba **ziji** de shu song-gei-le **ziji** de pengyou  
 Zhangsan think Lisi know Wangwu BA self DE book give-to-PERF self DE friend
- \*‘Z. thinks that L. knows that W. gave Z.’s books to L.’s friends.’      \*LDR<sub>1</sub>...LDR<sub>2</sub>  
 \*‘Z. thinks that L. knows that W. gave L.’s books to Z.’s friends.’      \*LDR<sub>2</sub>...LDR<sub>1</sub>  
 ‘Z. thinks that L. knows that W. gave Z.’s books to Z.’s friends.’      LDR<sub>1</sub>...LDR<sub>1</sub>  
 ‘Z. thinks that L. knows that W. gave L.’s books to L.’s friends.’      LDR<sub>2</sub>...LDR<sub>2</sub> (Pan, 1997)

In the example above, there are two clausemate long-distance *ziji*s, one in *ziji*’s books and the other in *ziji*’s friends. As the translations indicate, the sentence is an acceptable report only of scenarios where the books and the friends are possessed by the same person (here, either Zhangsan or Lisi). Thus, to make things slightly more concrete, (365) is an unacceptable report of the following scenario:

<sup>6</sup>The co-determination of two reflexives was noted for Japanese *zibun* in Howard and Niyekawa-Howard (1976) and further discussed in Iida (1992).



- (366) **S:** Lisi, Zhangsan, and Wangwu are brothers. Lisi has a very valuable library of books that he entrusts to Wangwu for safekeeping while he is in the U.S. for schooling. Unfortunately, while Lisi is away, Wangwu suffers severe financial hardship, and ends up owing a great deal of money to a group of Zhangsan's friends, who pressure him for money he simply doesn't have. Wangwu seeks Zhangsan's help, and Zhangsan brokers a deal with his friends: cancellation of all debts in exchange for Lisi's library. A few days later, Lisi calls Zhangsan and leaves a nasty message on his answering machine. Zhangsan is worried – has someone told Lisi about the trade?

Thus, two clausemate *ziji*s must “shift together.” Importantly, this applies *only* to long-distance bound *ziji*s. Thus, in scenarios where *ziji*'s books are Wangwu's books, the friends given the books can be either Lisi's or Zhangsan's (or, of course, Wangwu's). Similar facts hold if *ziji*'s friends are Wangwu's friends. This suggests that short-distance and long-distance *ziji* should be distinguished.

Note that “shift together” operates vis à vis logophoric *ziji* and long-distance *ziji*. To reduce the complexity of the the example slightly, I will consider only one embedding verb:

- (367) Lisi zhidao Wangwu ba **ziji** de shu song-gei-le **ziji** de pengyou  
 Lisi zhidao BA self DE book give-to-PERF self DE friend
- \*‘Lisi knows that Wangwu gave my books to L.’s friends.’ \*LOG<sub>I</sub>...LDR<sub>2</sub>  
 \*‘Lisi knows that Wangwu gave Lisi’s books to my friends.’ \*LDR<sub>2</sub>...LOG<sub>I</sub>  
 ‘Lisi knows that Wangwu gave my books to my friends.’ LOG<sub>I</sub>...LOG<sub>I</sub>  
 ‘L. knows that Wangwu gave Lisi’s books to Lisi.’s friends.’ LDR<sub>2</sub>...LDR<sub>2</sub>

Thus, continuing with the scenario in (366), it is impossible for Zhangsan to say (367) and mean “Lisi knows that Wangwu gave Lisi's books to my friends.” As with the above example, if one *ziji* is short-distance bound by Wangwu, the other *ziji* may refer to Wangwu, Lisi, or the speaker (in this example, Zhangsan).

Having dealt with clausemate *ziji*s, it is time to tackle multiple embeddings. Our target sentence will be *John hopes that Mary knows that self's mother said that self is an honest person..* Let me fix a few test scenarios concretely.

- (368) **S<sub>1</sub>:** John is angling to get a date with Mary. It is common belief around school that John is a disreputable character. However, Mary's mother thinks John is an honest person, and Mary holds great stock in her mother's character judgments.

*John hopes that Mary knows that her mother thinks he is an honest person.*

John hopes that Mary knows that ziji's mother thinks ziji is an honest person.

**S<sub>2</sub>:** My best friend John is setting me up with Mary, a woman who his mother volunteers with and who John says is perfect for me. Mary has had a history with unsuitable boyfriends, making her very cautious. Although he forgot to tell his mother to talk me up before the first date,

*John hopes that Mary knows that his mother thinks I am an honest person.*

John hopes that Mary knows that ziji's mother thinks ziji<sub>I</sub> is an honest person.

**S<sub>3</sub>:** Mary, a former runaway, is in a job placement program run by John, a friend of my mother's. Mary has had problems in the program, since, wrongly or rightly, she thinks her employers don't

trust her. Recently, John complained about this to my mother, who, averring Mary's honesty, offered to hire her. Mary has never trusted my mother, but John hopes this arrangement will change things. And, although he hasn't told her,  
*John hopes that Mary knows that my mother thinks she is an honest person.*  
 John hopes that Mary knows that  $ziji_i$ 's mother thinks  $ziji$  is an honest person.

In all of these scenarios, the target sentence involves the two *ziji*s being anteceded by different attitude holders. My informants reject the target sentence (369) in these three scenarios, as well as other intervening readings (whose scenarios I have left out for reasons of space):

- (369) John xiwang Mary zhidao [**ziji** de mama renwei [**ziji** shi yi-ge chengshi de ren]]  
 John hope Mary know [self DE mother think [self COP one-CL honest DE person]]  
 'John hopes that Mary knows that...'  
 a. **my** mother thinks that {**I**, \*he, \*she<sub>S<sub>3</sub></sub>} am an honest person.'  
 b. **his** mother thinks that {\*I<sub>S<sub>2</sub></sub>, **he**, \*she} is an honest person.'  
 c. **her** mother thinks that {\*I, \*he<sub>S<sub>1</sub></sub>, **she**} is an honest person.'  
 d. [{**my**, **his**, **her**} mother]<sub>i</sub> thinks that **she**<sub>i</sub> is an honest person.'

The generalization that emerges is the following: if the lower *ziji* is anteceded by John, Mary, or AUTH(c@), the other *ziji* must be as well. Note, however, the last set of readings: when the lower *ziji* is anteceded by the mother, the higher *ziji* has no restrictions on its antecedent. This is precisely the signature of the NO INTERVENING BINDER constraint that I argued operates in both Zazaki and Amharic indexical shift. The fact that *ziji* obeys NO INTERVENING BINDER, is interpreted *de se* when long-distance bound, and has 1st person reference when unembedded strongly suggests that it and indexical shift should be derived via a common mechanism.

### On short-distance *ziji*

As noted by Li and Thompson (1981); Huang and Tang (1991), short-distance *ziji* is also subject-oriented, suggesting unification between short- and long-distance forms.<sup>7,8</sup>:

<sup>7</sup>Note that the term subject here must be suitably defined to allow *ba* and *bei* phrase NPs to count as subjects, as they too function as short-distance *ziji* binders:

- (xxvii) Zhangsan<sub>i</sub> yiwei Lisi<sub>j</sub> hui ba Xiao Ming<sub>k</sub> dai hui  $ziji_{i/j/k}$ -de jia  
 Zhangsan thought Lisi will BA Xiao Ming take back self-POSS home  
 'Zhangsan<sub>i</sub> thought that Lisi<sub>j</sub> would take Xiao Ming<sub>k</sub> back to his<sub>i/j/k</sub> home.' (Cole and Wang, 1996a)

I will not enter into the vast literature on these constructions and how they can serve as subjects; see Cole et al. (2005) for discussion.

<sup>8</sup>This generalization is not universally accepted in the literature. Pan (1997) thus argues that in the following the dative argument can bind *ziji* short-distance:

- (xxviii) Sheyingshi<sub>i</sub> gei Bill<sub>j</sub> kan  $ziji_{i/j}$  de zhaopian  
 photographer to Bill see self DE picture  
 'The photographer showed Bill pictures of {him<sub>i</sub>, himself<sub>j</sub>}.' (Pan, 1997)

- (370) John<sub>i</sub> gei Bill<sub>j</sub> ziji de zhaopian  
 John give Bill self DE picture  
 ‘John<sub>i</sub> gave Bill<sub>j</sub> pictures of {him<sub>i</sub>, \*himself<sub>j</sub>}.’

However, there are differences between the two forms. First, Li and Thompson (1981) claim that the antecedent for long-distance *ziji* must be “animate” and “conscious,” a claim which in the intensional cases is reducible to *de se* ascription. Short-distance *ziji* does not show this requirement:

- (371) S: John, while asleep, rolls in such a way that he hits his leg.

John da-le ziji xixiar  
 John hit-PERF self one time

‘John hit himself once.’ (Pan, 1997)

However, it might be argued that the requirement that long-distance *ziji* be animate/conscious/*de se* arises because of the intensional context *ziji* is in.<sup>9</sup> There are, however, two stronger arguments militating against a unified analysis. First, as noted above, NO INTERVENING BINDER holds with respect to two long-distance *ziji*s. Local and long-distance *ziji* may co-exist in the same clause with no problem. Second, as (Pan, 1997) points out, short-distance *ziji* is not subject to the infamous Blocking Effect, which prevents *ziji* from being bound across a 1st or 2nd person intervener:

- (372) a. Zhangsan gaosu wo ziji-de fenshu  
 Zhangsan tell I self-POSS grade  
 ‘Zhangsan told me about his own grade.’ (Huang and Liu, 2001)
- b. John<sub>i</sub> renwei wo/ni<sub>j</sub> zhidao ziji<sub>\*i/j</sub>-de fenshu BLOCKING EFFECT  
 John think I/you know self-POSS grade  
 ‘John thinks I/you know {\*his<sub>i</sub>, my/your<sub>j</sub>} grade.’

These two reasons – the violation of NO INTERVENING BINDER and the lack of the Blocking Effect – strike me as the best arguments against assimilating the two *ziji*s into one form, and I will assume in what follows that there are in fact two distinct grammatical elements.

### 3.2.2 Assimilating *ziji*

In the previous section, I presented evidence suggesting that long-distance *ziji* is an instance of indexical. Within the context-overwriting framework sketched in Chapter 2, the question becomes

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My informants find the reading where Bill binds himself extremely marginal. Note that the status of pre-verbal *gei* is quite controversial in this construction, given that it normally functions to introduce a goal or beneficiary (see (Her, 2006; Ting and Chang, 2004) for discussion), and here it is indirectly causative. It thus possible that non-subject binding in this construction is to be assimilated to binding by *ba* and *bei* phrases DPs.

<sup>9</sup>Let me make this a bit more concrete. Suppose that all *ziji* requires is to be operator-bound. Further, suppose that there are in Chinese two types of operators:  $OP_{self}$ , introduced by attitude verbs, and  $OP_{subject}$ , which simply serves as a syntactic binder of *ziji*. Under such an analysis, *ziji* itself does not force *de se* ascription; that is a property of the operator which binds it.

what kind of operator is involved. As neither 2nd person indexicals nor temporal indexicals shift in Mandarin, if *ziji* is a shifted indexical, it must be product of the the author-shifting operator  $OP_{AUTH}$ , not  $OP_V$ :

- (373) a. John gaosu Bill Mary da-le ni  
 John tell Bill Mary hit-PERF you  
 ‘John told Bill that Mary hit {you, \*Bill}.’  
 b. John jintian shuo Mary zuotian da-le ziji  
 John today say Mary yesterday hit-PERF self  
 ‘John<sub>i</sub> said today that Mary hit {him<sub>i</sub>, herself} yesterday.’

I will thus assume that *ziji* is semantically equivalent to *wo* ‘I’, and (as long-distance binding is optional), that all attitude predicates allow  $OP_{AUTH}$  headed complements:

- (374) a.  $[[ziji]^{c,I}] = AUTH(c) = [wo]^{c,I}$   
 b. BINDING OPTIONALITY: Mandarin attitude verbs may select for an  $OP_{AUTH}$  complement.

Thus, the cross-linguistic typology is revised as follows:

(375) Cross-linguistic variation (updated)

<b>AMHARIC, AGHEM</b>	SAY	[say ( $OP_{per}$ )]	optionally shifts 1st/2nd-per indexicals
<b>NAVAJO</b>	SAY	[say ( $OP_{per}$ )]	optionally shifts 1st/2nd-per indexicals
<b>SLAVE</b>	TELL	[tell ( $OP_{per}$ )]	optionally shifts 1st/2nd indexicals
	WANT	[want ( $OP_{auth}$ )]	optionally shifts 1st-per indexicals
<b>ZAZAKI</b>	SAY	[say $OP_{auth}$ ]	obligatorily shifts 1st-per indexicals
	SAY	[say ( $OP_V$ )]	optionally shifts all indexicals
<b>ENGLISH</b>	ALL	[att-verb]	no indexical shift
<b>MANDARIN</b>	ALL	[att-verb ( $OP_{auth}$ )]	optionally shifts 1st-per indexicals (all attitude verbs)

The denotation for *ziji* above predicts that *wo* should also shift. This is not correct:

- (376) John<sub>i</sub> shuo Bill da-le wo  
 John say Bill hit-PERF I  
 ‘John<sub>i</sub> said Bill hit {me, \*him<sub>i</sub>}.’

However, it is already known that person indexicals and long-distance *ziji* are not the best of friends – 1st and 2nd person elements block long-distance binding of *ziji*s in their scope, a fact known as the BLOCKING EFFECT:

- (377) John<sub>i</sub> shuo wo/ni<sub>j</sub> da-le ziji<sub>\*i/j</sub>  
 John say I/you hit-PERF self  
 ‘John said I/you hit {\*him, myself/yourself}.’

The exact statement of the Blocking Effect has been the subject of much controversy, as will be seen in a moment. To focus the discussion, let me state what I think the proper generalization is:

(378) THE BLOCKING EFFECT

No 1st or 2nd person elements within the scope of the attitude verb whose subject is the antecedent for *ziji*.

The discussion on the Blocking Effect has been obscure on this point, in large part because the data has been the subject of much disagreement; I will, I am afraid, only add to this disagreement based on survey of my informants. There are two questions at issue:

- (379) a. BLOCKING FEATURES: What are the features of elements that trigger blocking?  
 b. BLOCKING CONFIGURATIONS: In what syntactic/semantic configurations do they do so?

The earliest accounts (Huang (1984), Battistella (1989), Cole et al. (1990a), Sung (1990)) claimed that the Blocking Effect was triggered by intervening subjects that did not match the antecedent's person features (and number features, for Huang and Tang (1991)), and hence that 3rd person subjects block 1st or 2nd person long-distance antecedents:

- (380)  $ni_i$  shuo Zhangsan<sub>j</sub> chang piping  $ziji_{*i,j}$   
 you say Zhangsan often criticize self

'You<sub>i</sub> said that Zhangsan often criticized {himself, \*you}.' Huang and Tang (1991, ex. 45a, p. 277) [judgements of Huang & Tang]

This purported contrast was taken to be evidence for a cyclicity condition on *ziji* binding, either via successive cyclic head-movement Pica (1985); Battistella (1989); Cole et al. (1990b); Cole and Wang (1996b), IP-adjunction Huang and Tang (1991), or Agr-chaining Progovac (1992). In all of these proposals, the underlying idea was that agreement coupled with underspecificity leads to a conflict in  $\phi$  features two elements. Let me sketch how this works within the system of Cole and Wang (1996b), which involves four assumptions regarding  $\phi$  featural agreement: first, that *ziji* and its antecedent must share  $\phi$  features; second, that, as Chinese lacks verbal agreement, the Infl projection is featurally underspecified; third, that a specifier and head cannot differ in features (absence does not count as difference); and fourth, that when a long-distance anaphor adjoins to an Infl projection lacking  $\phi$  features, it transmits its own features to the mother node.<sup>10</sup> This suffices to derive the Blocking Effect. To be long-distance bound by an antecedent  $\alpha$ , *ziji* will have to successive-cyclically adjoin to each intervening Infl head, in the process forcing them to inherit its  $\phi$  features. Given the assumption that  $\alpha$  and *ziji* must agree in  $\phi$  features, the successive-cyclic adjunction story entails that all intervening Infs must also agree with  $\alpha$  in  $\phi$  features. But then in the case where an intervening subject  $\beta$  does not agree with  $\alpha$  in  $\phi$  features, the derivation will produce a structure violating Spec-Head agreement between  $\beta$  and its Infl. While this explanation

<sup>10</sup>This is actually a general rule of feature percolation: the features of a parent are those of its daughters; where the daughters conflict the head's features percolate.

for the Blocking Effect is principled, it turns out the empirical argument for it is incorrect; most speakers (including all of my informants) accept long-distance binding by a 1st or 2nd person element across an intervening 3rd person, as Pan (1997) points out.<sup>11</sup> Perhaps, however, this merely teaches us how person features operate (at least in Mandarin): 3rd does not block because it is itself featurally underspecified. Thus, it seems that the blocking features are those of the 1st and 2nd person.

However, note that the accounts above also privilege the syntactic subject position as the only potential locus for blocking. As Huang and Tang (1991) demonstrated, however, intervening experiencers and sub-commanders also trigger blocking effects:

- (381) a. Zhangsan<sub>i</sub> shuo wo<sub>j</sub> de jiao'ao hai-le ziji<sub>\*i/j</sub>  
 Zhangsan say I DE arrogance hurt-PERF self  
 Zhangsan said that **my** arrogance harmed {\*him, me}. (Huang and Tang, 1991, p. 269, ex. 17)
- b. [ [Zhangsan<sub>i</sub> dui ziji<sub>i/j/\*k</sub> mei xinxin de shi] shi wo<sub>j</sub> hen nanguo de xiaoxi ]  
 [ [Zhangsan to self no confidence DE fact] make me very sad DE news ]  
 shi Lisi<sub>k</sub> hen yiwai  
 make Lisi very surprised  
 The news that **I** was saddened by the fact that Zhangsan had no confidence in {himself, me, \*Lisi} surprised Lisi.' (Huang and Tang, 1991, p. 270, ex. 20)

Huang and Tang (1991) pointed out that in both cases above, the blocker appears to be a potential binder for *ziji*, either as a subcommander in *my arrogance*, or an experiencer in *DP make me sad*. They thus formulated the principle that interveners were not necessarily *subjects*, but potential binders, which under cyclic binding enforced  $\phi$  featural identity as well (that is, successive cyclic movement coupled with cyclic binding by a binder forced all the intervening binders to agree in  $\phi$  features). This proposal, however, is also unlikely, given that subcommanders of animate DPs cannot serve as binders, and yet trigger blocking effects for most of my informants (contra claims by Xue et al. (1994)):

- (382) John<sub>i</sub> shuo [wo<sub>j</sub> de mama]<sub>k</sub> da-le ziji<sub>\*i,\*j,k</sub>  
 John say I DE mother hit-PERF self  
 'John said that my mother hit herself.'

Interestingly, for six of my informants, the above example does not trigger a blocking effect (thus, it can mean *John said my mother hit him*.) However, for these same six informants, the inanimate subcommander cases *also* allow long-distance binding:

- (383) John<sub>i</sub> shuo [wo<sub>j</sub> de shu]<sub>k</sub> juangdao-le ziji<sub>i,j,?k</sub>  
 John say I DE book strike-PERF self

<sup>11</sup>However, Cole et al. (2001b) argue 3rd interveners produce blocking effects, though weaker than that of 1st or 2nd person cases. My informants report no difference between long-distance binding by a 3rd or 1st/2nd person antecedent across a 3rd person intervener. It is quite possible that this is the result of speaker variation, but without access to the relevant informants, I cannot state for certain.

‘John said that my book struck {him, me, ??itself}.’

I will return to this class of speakers in a moment.<sup>12</sup> First, however, let me point out as well that interveners need not be potential binders in any sense. Thus, consider the following example, where the offending blocker *ni* ‘you’ is in a clause subordinate to *ziji*.

- (384) Zhangsan<sub>i</sub> zhidao Mali<sub>j</sub> gen ziji<sub>\*i/j</sub> shuo-guo ni xiang qu Taiwan  
Zhangsan know Mary with self say-EXP you want go Taiwan  
Zhangsan knows that Mary told {\*him, herself} that you want to go to Taiwan. (Cole et al., 2001b)

Similarly, a 1st or 2nd person pronoun in a relative clause also produces a blocking effect, contrary to what one might expect:

- (385) John<sub>i</sub> shuo [ Mary<sub>j</sub> gei [ziji<sub>\*i,j,??k</sub> de mama] [ni<sub>k</sub> de shu] ]  
John say [ Mary gave [self DE mother] [you DE book] ]  
‘John said that Mary gave {\*his, her, ??your} mother your books.’

Thus, it seems that the blockers are 1st or 2nd person elements, regardless of where they appear within the embedded clause. I would like to suggest that the relevant prohibition is between the person indexicals and the operator responsible for shifting – that is, 1st and 2nd person elements in Mandarin cannot be in the scope of a shifting operator. They are thus shifting-operator polarity items:

- (386) INDEXICAL POLARITY  
*wo* and *ni* cannot be in the scope of a shifting operator.

This alone will not explain why *wo/ni* are bad in the scope of shifting operators, since they should, like PPIs, be allowed to move out of the scope of the operator. However, movement of indexicals in general would play havoc with the operator-theoretic explanation of indexical shift, since NO INTERVENING BINDER would simply disappear as a constraint. I will thus appeal to a stipulative movement principle to constrain the syntax appropriately:

- (387) INDEXICAL RIGIDITY  
Indexicals cannot move.

I do not, as of yet, understand why INDEXICAL RIGIDITY holds cross-linguistically. While in this case, I might appeal to a more palatable stipulation (i.e., although *wo/ni* may move, their traces still contain the offending feature responsible for INDEXICAL POLARITY), in general it must be assumed that these elements cannot move to determine their interpretation. However, there is some empirical evidence suggesting that a prohibition of these elements in the scope of the relevant operator is correct. Recall that I mentioned that for six speakers it was possible to have subcommanders containing 1st/2nd person elements which did not block long-distance binding, regardless of animacy:

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<sup>12</sup>Looking ahead, they are evenly split between LOG- and IND-Mandarin.

(388) John<sub>i</sub> shuo [wo<sub>j</sub> de mama]<sub>k</sub> da-le ziji<sup>1</sup><sub>\*i,\*j,k</sub>  
 John say I DE mother hit-PERF self  
 ‘John said that my mother hit herself.’

(389) John<sub>i</sub> shuo [wo<sub>j</sub> de shu]<sub>k</sub> juangdao-le ziji<sub>i,j,?k</sub>  
 John say I DE book strike-PERF self  
 ‘John said that my book struck {him, me, ??itself}.’

Importantly, for these six informants, the interpretive range of the embedding DP is constrained; when this sentence is acceptable, the entire DP must be interpreted *de re*:

(390) S<sub>1</sub>: John says, “Pranav’s book struck me!” (but it’s actually **not** my book) de dicto  
 S<sub>2</sub>: John says, “That book just struck me!” (doesn’t know it’s my book) de re

John<sub>i</sub> shuo [wo de shu] juangdao-le ziji<sub>i</sub>  
 John say I DE book strike-PERF self

John<sub>i</sub> said that my<sub>j</sub> book struck him<sub>i</sub>. (#S<sub>1</sub>, ✓S<sub>2</sub>) oblig. de re

Thus, when long-distance binding exists, the sentence above is only compatible with a scenario in which the speaker is actually asserting the existence of the relevant book of his. If the speaker in fact does not have a book, the sentence is infelicitous. This suggests that for the six speakers for whom subcommanders do not block long-distance binding, there is the possibility of repair of INDEXICAL POLARITY via movement of a DP containing the offending item. However, such movement comes at a cost: since the DP must move out of the scope of the operator, it must also move of the scope of the intensional quantification, and thus cannot be interpreted *de dicto*. In addition, scope trapping of the DP by an NPI licensed by the attitude predicate produces ungrammaticality, again as expected, since the DP is subject to two different scopal demands – scope out for the indexical, stay *in situ* for the polarity item:

(391) \* John<sub>i</sub> huaiyi wo/ni de renhe yi-ge xiongdi hui xihuan ziji<sub>i</sub>  
 John doubt I/you DE any one-CL brother WOLL like self  
 ‘John<sub>i</sub> doubts that any of my/your brothers would like him<sub>i</sub>.’

This suggests that the INDEXICAL POLARITY condition is accurate.<sup>13</sup>

Before continuing, it is worthwhile to stop and reflect on the possible source for INDEXICAL POLARITY. Pan (1997) comes to a generalization very similar to the one above, though he claims that the blocking feature at issue is *self-ascription*:

<sup>13</sup>There are, I believe, two potential counterexamples in the literature. The first involves cases where *wo/ni* are the arguments of irreflexive predicates:

(xxix) nuwang qing wo zuo zai ziji de shenbian  
 queen ask I sit at self DE side  
 ‘The queen asked me to sit beside her.’ (Yu, 1992)

(xxx) Zhangsan shenpa wo chaoguo ziji  
 Zhangsan worry I surpass ziji  
 ‘Zhangsan worried that I would surpass him.’ (Xu, 1993)



(392) THE CONDITION FOR SELF-AScription *Ziji*

*Ziji* can be bound to the carrier of belief, the most prominent self-ascriber, in a linguistic domain  $\gamma$  iff there is no blocker in the believed proposition contained in  $\gamma$ . (Pan, 2001, p. 298, ex. 31)

Let me ignore the prominence condition, which is irrelevant here.<sup>14</sup> Pan's idea is that the set of blockers always includes the 1st and 2nd person, since they are, in his terms, "obligatory self-ascribers," that is, always interpreted *de se*, and hence obligatory blockers. In contrast, an embedded 3rd person that is not the bearer of a *de se* attitude does not block (in this way it is possible to derive NO INTERVENING BINDER). However, crucial to Pan's story is the contrast between obligatory self-ascribers (1st and 2nd person) and non-obligatory ones. His evidence for this contention comes the following contrast:

- (393) a. I think I am smart.  
b. You think you are smart.  
c. John thinks he is smart.

As Pan observes, the 3rd person case can quite easily be used in a scenario where the speaker is ascribing a *de re* thought to John regarding himself. The first two seem less readily accessible to a *de re* interpretation. However, as Stechow (1982); Boer and Lycan (1986) point out, this is an artifact of the fact that these are in the present tense. In the *past*, it is perfectly possible to read *I de re*:

- (394) [Following Reinhart (1990)] My family has a new answering machine, and we must record a greeting. In order to see whose voice sounds best when recorded by the machine, I record everyone and listen to the playbacks. Unfortunately, the machine is so unfaithful in its recording that I cannot

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However, three points are worth noting regarding these examples. First, these examples are hardly perfect, and all of my informants note that substitution of *ziji* with *ta* 'him/her' is preferred. Second, *ziji* in neither of these examples is obligatorily interpreted *de se* (as we saw for *qing* above already), contrary to other attitude predicates (thus, if *shenpa* is replaced with *renwei* 'think', the sentence is rather clearly ungrammatical); indeed a non-*de se* reading is in fact preferred. Finally, these two observations are *independent* of both the  $\phi$  features of the subject (i.e., if *wo* is replaced by *John*) or whether the predicate is irreflexive (replace the embedded predicated by *da-le ziji* 'hit self'). I take this to suggest that, like *qing*, *shenpa* is either not an attitude predicate or does not take the shifting operator, and hence long-distance binding is via the means used for extensional cases of LDR.

The second potential counterexamples involve cases where the 1st/2nd person elements follow *ziji*:

(xxx1) [?\*]

John<sub>i</sub> shuo Bill ba ziji<sub>i</sub> de shu songgei-le wo/ni  
John say Bill BA self DE book give-PERF I/you

'John<sub>i</sub> said that Bill gave his<sub>i</sub> books to me/you.' (Pan, 1997); judgements from my informants

Pan (2001) reports that these are acceptable. My informants do not agree with these judgments, but I do think that for those who do it is a processing effect, in line with the claims of Pan (1997).

<sup>14</sup>Pan uses it to explain why in equivalents of *Bill heard from me that Sue criticized ziji.*, *ziji* is not bound by *me*, which in his theory is an obligatory self-ascriber.

tell which voice is mine. I rule out voice #3 as too squeaky, only to discover that it was *my* voice (say, by process of elimination).

I thought my voice was too squeaky.

Thus, *de se* ascription is hardly necessary for 1st and 2nd person terms; it is merely the epistemological truth that when I attribute something to myself in the present, I am making a claim about my present mental state based on my present knowledge. This makes the *de re* reading pragmatically bizarre. This is less true for the 2nd person, since it is possible that I can inform my addressee of his thoughts regarding himself (“According to this chart, you think you are the smartest.”). Thus, it is hard to see how the 1st and 2nd person are obligatorily interpreted *de se*.

Note too that under this formulation, one would predict that an intervening attitude-holder controlled PRO would block long-distance binding of *ziji* as much as the 1st or 2nd person, since it is an obligatory *self ascriber*. This is, however, simply not true:

- (395) John<sub>i</sub> renwei [Bill<sub>j</sub> xiang [PRO<sub>j</sub> gei ziji<sub>i/j</sub> guahuazi]]  
John think [Bill want [PRO give self shave]]  
'John<sub>i</sub> thinks Bill wants to shave {him<sub>i</sub>, himself<sub>j</sub>}'

The above example is felicitous only if John thinks, “Bill wants to shave me.”; if John attributed a *de re* want to Bill, the sentence is infelicitous. For Pan, it is not clear why this example is good, given the presence of the obligatory self-ascriber Bill. Note that his account does derive NO INTERVENING BINDER, since in all such cases there will be a blocking element, namely, the element attempting to bind the other *ziji*. The puzzle for Pan, then, is how to account for the difference between cases of control and *ziji* binding separately. Within the present theory, these arise essentially for free, since *ziji*'s values are those reserved in a special slot on the evaluation sequence.

In summary, I think that the correct characterization of the distribution of the Blocking Effect is one based on the relation between certain forms *wo/ni* and a shifting operator. Thus, it is possible to maintain my contention that *ziji* is in fact denotationally identical to the 1st person indexical in Mandarin without predicting that *wo* itself shifts.

### 3.3 Two Mandarin dialects

#### 3.3.1 The Initial Puzzle

There is one more property to check in order to ensure that *ziji* is a shifted indexical: it should not show the intervention we saw for *de se* anaphora in Chapter 1.

I will start with double-object constructions. First note that in these constructions, the goal *c*-commands the theme at surface structure, given the ability of a quantified goal to bind the theme and the lack of covert QR in Mandarin:

- (396) John<sub>i</sub> renwei Bill<sub>j</sub> gei mei-ge ren<sub>i</sub> ta<sub>i</sub>-de shu  
John thinks Bill give every-CL person self-POSS book  
'John<sub>i</sub> thinks that Bill<sub>j</sub> gave every person<sub>i</sub> his<sub>i</sub> book.'

Now we replace the goal with a pronoun, which we interpret in a context where it is co-referent with the attitude holder. The expectation is, of course, that *ziji* should be able to refer long-distance to John as well. However, as mentioned at the outset of this chapter, this is not universally true for my informants:

- (397) John<sub>i</sub> renwei Bill<sub>j</sub> gei ta<sub>i</sub> ziji<sub>j</sub>-de shu  
 John thinks Bill give he self-POSS book  
 ‘John<sub>i</sub> thinks that Bill<sub>j</sub> gave him<sub>i</sub> his<sub>\*i/j</sub> book.’ [16 speakers (LOG-Mandarin)]  
 ‘John<sub>i</sub> thinks that Bill<sub>j</sub> gave him<sub>i</sub> his<sub>i/j</sub> book.’ [13 speakers (IND-Mandarin)]

Over half of my informants reject the above sentence in scenarios where *John*, *ta*, and *ziji* co-refer; the lack of long-distance binding is independent of whether *ta* is read *de re* or *de se*. Further, when *ta* no longer c-commands *ziji*, co-reference is once again possible for all speakers:

- (398) John<sub>i</sub> renwei Bill<sub>j</sub> gei ta<sub>i</sub>-de mama ziji<sub>i/j</sub>-de shu  
 John thinks Bill give he-POSS mother self-POSS book  
 ‘John<sub>i</sub> thinks that Bill<sub>j</sub> gave his<sub>i</sub> mother his<sub>i/j</sub> book.’ [29 speakers]

The same pattern can be replicated with the addressees of communication verbs. First note that the experiencer of a communication verb such as *jiang* ‘tell’ c-commands into the embedded clause, as demonstrated by Condition C effects with the addressee of ‘tell’:

- (399) a. Mary gei ta<sub>i,\*j</sub> jiang-le Bill<sub>j</sub> da-le John  
 Mary give him tell-PERF Bill hit-PERF John  
 ‘Mary told him<sub>i,\*j</sub> that Bill<sub>j</sub> hit John.’  
 b. Mary gei ta<sub>i,j</sub>-de mama jiang-le Bill<sub>j</sub> da-le John  
 Mary give he-POSS mama tell-PERF Bill hit-PERF John  
 ‘Mary told his<sub>i,j</sub> mother that Bill<sub>j</sub> hit John.’

We can thus test the c-command pattern by embedding the sentence above underneath an attitude verb. Once again, when the experiencer is interpreted co-referent with the attitude holder, long-distance binding is blocked for the same 16 informants (400a) (here, I ignore the possibility of long-distance binding by Mary). And, once again, when the co-referential pronoun no longer c-commands *ziji*, long-distance binding becomes possible for all speakers (400b):

- (400) a. John<sub>i</sub> renwei Mary gei ta<sub>i</sub> jiang-le Bill<sub>j</sub> da-le ziji<sub>\*i/j</sub>  
 John thinks Mary give him tell-PERF Bill hit-PERF self  
 ‘John<sub>i</sub> thinks that Mary told him<sub>i</sub> that Bill<sub>j</sub> hit {himself, \*him<sub>i</sub>}.’ [16 speakers (LOG-Mandarin)]  
 ‘John<sub>i</sub> thinks that Mary told him<sub>i</sub> that Bill<sub>j</sub> hit {himself, him<sub>i</sub>}.’ [13 speakers (IND-Mandarin)]  
 b. John<sub>i</sub> renwei Mary gei ta<sub>i</sub>-de mama jiang-le Bill<sub>j</sub> da-le ziji<sub>i/j</sub>  
 John thinks Mary give he-POSS mother tell-PERF Bill hit-PERF self  
 ‘John<sub>i</sub> thinks that Mary told his<sub>i</sub> mother that Bill<sub>j</sub> hit {himself, him<sub>i</sub>}.’ [all 29 speakers]

13 of the 29 speakers behave as expected under the indexical shift theory of *ziji*, but the remaining 16 unexpectedly show sensitivity to the exact syntactic signature of the *De Re* Blocking Effect: when a c-commanding *de re* equivalent intervenes between a *de se* anaphor and its binder, the representation is ill-formed. Thus, it appears that there is a split amongst speakers in how they represent long-distance binding. The 13 speakers who showed no sensitivity to intervention support the analysis of *ziji* as a shifted indexical; I will call these 13 speakers of IND-Mandarin. The remaining 16, who speak LOG-Mandarin, suggest a syntactically-mediated process, like the binding by OP-LOG argued to control Yoruba logophoric environments and English dream reports. However, as we observed in Chapter 1, neither of these environments obeys NO INTERVENING BINDER, in contrast to the behavior of *ziji* for all 29 speakers. However, recall the fix effected for von Stechow’s verbal quantifiers approach in the previous chapter: I proposed that Amharic, Slave, and Zazaki shifting verbs were marked with NO FREE 1ST, a diacritic which prevented elements with the [author\*] feature from being unbound in the scope of the verb:

- (401) NO FREE 1ST  
 $V \lambda \langle x^a, y^b, w, t, l \rangle [z + \text{author}^*]$  is an ill-formed expression.

A similar diacritic on OP-LOG will allow us to capture NO INTERVENING BINDER for syntactically bound *ziji*.<sup>15</sup>

- (402)  $OP-LOG_j^u = OP-LOG_j + NO\ FREE\ [log]$ :  
 $[OP-LOG_j^u \dots [x_i\ log]]$  is an ill-formed expression, unless there is an intervening  $OP-LOG_i^u$ .

- (403) Mandarin-internal typology

**LOG-MANDARIN** ALL [att-verb ( $OP_{auth}$ )] optionally shifts 1st-per indexicals (all attitude verbs)  
**IND-MANDARIN** ALL [att-verb ( $OP-LOG^u$ )] optionally binds all [log] items (all attitude verbs)

With this diacritic in place, it is now possible to assimilate LOG-Mandarin to the other cases of binding by a logophoric operator, and hence admit the effect of a *De Re* Blocking Effect. As for the Blocking Effect, I will assume a similar restriction on the 1st and 2nd person forms as above:

- (404) LOG-Mandarin INDEXICAL POLARITY  
 $wo$  and  $ni$  cannot be in the scope of an  $OP-LOG_j^u$ .

Thus, the variation on this simple test suggests that there are in fact two different ways to long-distance anaphora, the two dedicated methods of *de se* ascription that were considered in Chapter 1 and Chapter 2. In the following sections, I will defend this differential treatment of IND-Mandarin and LOG-Mandarin further, based on how freely they interpret *ziji*, deal with the Blocking Effect and dream reports.

One piece of notation will help me keep perspicuous in which language a relevant expression is ungrammatical. I will use  $*^L$  to indicate that a reading is ungrammatical for LOG-Mandarin and  $*^I$  to indicate that it ungrammatical for IND-Mandarin.

<sup>15</sup>Alternatively, we could stipulate that for LOG-Mandarin, each OP-LOG obligatorily bears the same distinguished index.

### 3.3.2 Constraints on “logophoric interpretations”

Recall that one of the arguments I provided in favor of an indexical treatment of *ziji* was its ability to refer to the speaker when not anteceded. Following Li (1991), this has been taken to be a result of “logophoric” interpretation of *ziji*, whereby it freely refers to the (always contextually salient) speaker. However, for LOG-Mandarin speakers, this interpretation is constrained by the *De Re* Blocking Effect – when *ziji* is c-commanded by a (non-subject) 1st person pronoun, it cannot refer to the speaker:

- (405) a. Bill<sub>i</sub> gei wo<sub>j</sub> ziji<sub>i/\*Lj</sub>-de shu  
 Bill give I self-POSS book  
 ‘Bill<sub>i</sub> gave me<sub>j</sub> his<sub>i/\*Lj</sub> my<sub>j</sub> book.’ LOG-Mandarin  
 ‘Bill<sub>i</sub> gave me<sub>j</sub> his<sub>i</sub>/my<sub>j</sub> book.’ IND-Mandarin
- b. Bill<sub>i</sub> gei wo<sub>j</sub>-de mama ziji<sub>i/j</sub>-de shu  
 Bill give I-POSS mother self-POSS book  
 ‘Bill<sub>i</sub> gave my<sub>j</sub> mother his<sub>i</sub>/my<sub>j</sub> book.’

Were the “logophoric” interpretation provided by discourse, unmediated by syntax, this contrast would be highly surprising. Anand and Hsieh (2005) argue that the fact that “logophoric” *ziji* obeys the *De Re* Blocking Effect diagnoses that it is, in fact, the result of binding by a covert referentially denoting element: the P(erspectival)-Center. Following Tenny and Speas (2003), Anand and Hsieh (2005) assume that the P-Center is a point-of-view head high in the left periphery that referentially denotes the psychological perspective from which the sentence is situated (in analog to the deictic center for a sentence). Although the P-Center is syntactic (and hence enters into binding competition), its value is (partially) discourse dependent. Thus, they point out that while the default is for unbound *ziji* to refer to the speaker, it may also refer to the addressee, especially (but not only) in questions (note that the latter example is ambiguous between an impersonal and 2nd person generic statement; IND-Mandarin speakers only allow the generic interpretation, suggesting that it is a case where local *ziji* is bound by a generic operator):

- (406) ziji weishenme bu qu ne  
 self why NEG go Q  
 ‘Why didn’t self(I/\*I you) go?’ (Pan, 2001)
- (407) ziji da ziji bu hao  
 self hit self NEG good  
 ‘You hitting yourself isn’t good.’ \*IND-Mandarin  
 ‘Self-hitting isn’t good.’

In addition, it may also take on the perspective of a 3rd person, provided a rich enough context. Thus, within narrative contexts, it may be used to ascribe a *de se* belief to the narrative center:

- (408) In a biographical narration of John’s life
- lingdao de biaoyang dui ziji shi yi-ge bianche same as ((363))  
 leader DE compliment to self COP one-CL impetus

‘The leader’s compliment was an encouragement to John.’ \*IND-Mandarin

However, these readings are likewise affected by the *De Re* Blocking Effect:

- (409) a. John<sub>i</sub> weishenme gei ni<sub>j</sub> ziji<sub>i/\*Lj</sub> de shu ne  
 John why give you self DE book Q  
 ‘Why did John give you his book?’ LOG-Mandarin  
 ‘Why did John give you {his, my} book?’ IND-Mandarin
- b. John<sub>i</sub> weishenme gei ni<sub>j</sub> de mama ziji<sub>i/j</sub> de shu ne  
 John why give you DE mother self DE book Q  
 ‘Why did John give your mother {his, your} book?’ LOG-Mandarin  
 ‘Why did John give your mother {his, my} book?’ IND-Mandarin

In contrast, as can be seen above, IND-Mandarin *ziji* is rigidly 1st person denoting in these contexts, and is likewise unaffected by co-referential interveners. This is, again, as expected if it were simply an indexical element.

P-center binding of LOG-Mandarin *ziji* is simply a case of local binding, and hence if there is a closer long-distance binder than the P-center, it will be preferred. Thus, concretely speaking, for LOG-Mandarin, a *ziji* that could be long-distance bound by a 1st person antecedent will always be bound by that antecedent. In contrast, IND-Mandarin licenses 1st personal *ziji* in virtue of it being an indexical, and hence a long-distance 1st person subject need not force the insertion of an  $OP_{auth}$  to “bind” *ziji*. Here are three experiments to test this difference between the two languages. All involve cases where *ziji* is in a configuration to be long-distance bound by a 1st person antecedent.<sup>16</sup> First, consider the test for *de se* used at the outset, only now with a 1st person antecedent:

- (410) S<sub>1</sub>: I say, “That thief stole my purse!”  
 S<sub>2</sub>: I say, “That thief stole that purse!” (don’t know it was *my* purse).
- wo shuo pashou tou-le ziji-de pibao  
 I say pickpocket steal-PERF self-DE purse
- ‘I said that the pickpocket stole my purse.’ LOG-Mandarin: [✓S<sub>1</sub>, #S<sub>2</sub>]  
 ‘I said that the pickpocket stole my purse.’ IND-Mandarin: [✓S<sub>1</sub>, ✓S<sub>2</sub>]

The LOG-Mandarin speakers behave in line with the 3rd person antecedent judgments; *ziji* must be read *de se*. However, IND-Mandarin speakers allow an apparent long-distance bound *ziji* to be used in *de re* situations as long as the antecedent is 1st person. This is expected if IND-Mandarin speakers need not introduce an operator to license long-distance 1st person binding.

Now consider the elliptical *ye yiyang* ‘the same’, which I showed earlier forces sloppy interpretation of long-distance *ziji*. For LOG-Mandarin speakers, this is true for 1st person antecedents as well, but for IND-Mandarin speakers, a strict interpretation is also possible:

<sup>16</sup>These experiments were all run with 2nd person antecedents as well; as expected, they pattern with 3rd person cases. They are not indicated for reasons of space.

- (411)  $wo_i$  shuo Lisi changchang kuidai  $ziji_i$ ; Wangwu ye yiyang  
 I say Lisi always mistreat self; Wangwu also the same  
 ‘I<sub>i</sub> say that Lisi always mistreats me<sub>i</sub>; so does Wangwu<sub>j</sub> [say Lisi always mistreats {me<sub>i</sub>/him<sub>j</sub>}].’  
 IND-Mandarin  
 ‘I<sub>i</sub> say that Lisi always mistreats me<sub>i</sub>; so does Wangwu<sub>j</sub> [say Lisi always mistreats {\*me<sub>i</sub>/him<sub>j</sub>}].’  
 LOG-Mandarin

Thus, IND-Mandarin speakers show evidence that *ziji* may behave like a pronominal when it is antecedentless; for LOG-Mandarin speakers, it is always a bound variable.

A further test which demonstrates this involves the blocking effect. Recall that the characterization above prohibits 1st or 2nd person elements within the scope of the relevant operator ( $OP_{auth}$  or  $OP-LOG^u$ ). However, if *ziji* can get a 1st person interpretation without a shifting operator, a 2nd person intervener would *not* block a 1st person long-distance antecedent. Again, this Blocking Effect amelioration is true for IND-Mandarin, but not LOG-Mandarin (I demonstrate the ungrammaticality of the reverse to hammer home that this is something about the 1st person usage alone):

- (412) a.  $wo_i$  renwei  $ni_j$  da-le  $ziji_{*L_i/j}$   
 I think you hit-PERF self  
 ‘I thought you hit {yourself, me}.’ IND-Mandarin  
 ‘I thought you hit {yourself, \*me}.’ LOG-Mandarin
- b.  $ni_i$  renwei  $wo_j$  da-le  $ziji_{*i/j}$   
 You think I hit-PERF self  
 ‘You thought I hit {\*you, myself}.’

Finally, what about dream reports? The short answer is that they pattern consistently with the division shown above. LOG-Mandarin shows the behavior I demonstrated for Yoruba in Chapter 1 – two pronouns show no ORC effect, but a long-distance *ziji* and a pronoun show consistent *De Re* Blocking. IND-Mandarin, however, shows no ORC effect *at all*, which is consistent with the ORC being derivative of a syntactic condition:

- (413)  $wo_i$  meng-dao  $wo_j$  shi Brigitte Bardot erqie John gei  $wo_{i/j}$   $wo_{i/j}$  de hua  
 I dream I COP Brigitte Bardot and John give me me DE picture.  
 ‘I dreamed I was Brigitte Bardot and John gave {me<sub>me</sub> my<sub>B.B.</sub> picture, me<sub>B.B.</sub> my<sub>me</sub> picture}.’
- (414) George<sub>i</sub> meng-dao ta<sub>j</sub> shi Brigitte Bardot erqie John<sub>k</sub> gei ta<sub>i/j</sub>  $ziji_{*i/*L_j/k}$  de hua  
 George dream he COP Brigitte Bardot and John give him self DE picture  
 ‘George<sub>i</sub> dreamed he<sub>j</sub> was Brigitte Bardot and John<sub>k</sub> gave him<sub>B.B./G.</sub> {his<sub>k</sub>, \*his<sub>i</sub>, \*his<sub>j</sub>} picture.’ LOG-Mandarin  
 ‘George<sub>i</sub> dreamed he<sub>j</sub> was Brigitte Bardot and John<sub>k</sub> gave him<sub>B.B./G.</sub> {his<sub>k</sub>, \*his<sub>i</sub>, his<sub>j</sub>} picture.’ LOG-Mandarin

Let me sum up this data. I have shown that LOG-Mandarin *ziji*, in addition to its 1st personal reading, may also, in the correct contexts, be used to refer to an addressee or the mental state of a 3rd person protagonist in narrative contexts. However, all of these cases are subject to the *De Re* Blocking Effect, suggesting that there is a syntactic element ultimately responsible for binding “antecedentless” *ziji*. This was further confirmed by the observation that in contexts where there can be an overt 1st person antecedent, it must antecede, introducing all the concomitant baggage: *de se* interpretation, sloppy identity, and the Blocking Effect. In contrast, IND-Mandarin showed precisely the opposite behavior on all counts: it cannot pick up a non-1st antecedent (except a generic) and allows non-*de se* readings, strict identity, and Blocking Effect amelioration, as long as the antecedent is 1st person. All of this data squares with the disjunctive theory I have been building. As for IND-Mandarin, *ziji* is pronominal, in antecedentless contexts, that pronominal nature rises to the surface. LOG-Mandarin, on the other hand, never has syntactically free *ziji*s – they are always bound by an element which tracks perspective-taking. As I briefly demonstrated at the end, the dream report cases align with other attitude contexts: LOG-Mandarin speakers show a *De Re* Blocking Effect while IND-Mandarin speakers do not.

### 3.4 LDR, indexicals, and rationale clauses

The aim of the above section was to demonstrate that the differences between IND-Mandarin and LOG-Mandarin can be found in many areas. In this section, I will concentrate on an intricate series of facts regarding the nature of long-distance binding and indexicality in one particular type of construction, the Mandarin rationale clause, which is illustrated below:

- (415) Bill mai-le yi-ben shu (∅, lai, qu) (\*John) kan  
 Bill buy-PERF one-CL book (∅, come, go) (\*John) read  
 ‘Bill bought a book {to read, \*for John to read}.’

As shown above, Mandarin rationale clauses may either be null-headed or take one of two heads that are homophonous with the directionals: *lai* ‘come’ and *qu* ‘go’. Anand and Hsieh (2005) note that, surprisingly, the rationale clause head constraints long-distance *ziji* binding possibilities. When neither *lai* nor *qu* head the purpose clause, *ziji* ‘self’ can be long-distance bound, as is otherwise expected.

- (416) Null-headed purpose clause; LDR possible: [1/2/3...[3...∅...ziji]]  
 wo/ni/Bill<sub>i</sub> renwei John<sub>j</sub> jintian na yizhi ∅ da ziji<sub>i/j</sub>.  
 I/you/Bill think John today take chair ∅ hit self  
 ‘I/you/Bill<sub>i</sub> think that today John<sub>j</sub> took a chair in order to hit himself<sub>i/j</sub>/me/you.’

However, when *lai* and *qu* are present, they constrain the LD-binding possibilities. For all speakers, *qu* ‘go’ prevents *any* long-distance binding out of its scope.

- (417) LDR impossible with *qu*: [1/2/3...[3...qu...ziji]]\*



wo/ni/Bill<sub>i</sub> renwei John<sub>j</sub> jintian na yizhi **qu** da ziji<sub>\*i/j</sub>.  
 I/you/Bill<sub>i</sub> think John today take chair GO hit self

‘I/you/Bill<sub>i</sub> think that today John<sub>j</sub> took a chair in order to hit himself<sub>\*i/j</sub>/\*me/\*you.’

On the other hand, *lai* ‘come’ blocks long-distance binding in LOG-Mandarin, contingent on the person features of the antecedent, allowing only 3rd person LD-binders.

(418) LDR with *lai* dependent on binder’s person features

a. LDR possible: [3...[3...*lai*...*ziji*]]

Bill<sub>i</sub> renwei John<sub>j</sub> jintian na yizhi **lai** da ziji<sub>i/j</sub>.  
 Bill think John today take chair COME hit self

‘Bill<sub>i</sub> thinks that today John<sub>j</sub> took a chair in order to hit himself<sub>i/j</sub>.’

b. LDR impossible in LOG-Mandarin: [1/2...[3...*lai*...*ziji*]]\*<sup>L</sup>

wo/ni<sub>i</sub> renwei John<sub>j</sub> jintian na yizhi **lai** da ziji<sub>\*L*i/j*</sub>.  
 I/you think John today take chair COME hit self

‘I/you think that today John took a chair in order to hit himself/\*<sup>L</sup>me/\*<sup>L</sup>you.’ LOG-Mandarin

‘I/you think that today John took a chair in order to hit himself/me/you.’ IND-Mandarin

Thus, the puzzle is three-fold: What differentiates *lai/qu* headed clauses from null clauses? From each other? Why is there differential behavior for the two Mandarins on *lai*-headed clauses, but not *qu*-headed clauses? Following Anand and Hsieh (2005), I will argue that the culprit in the *lai*-headed cases is, in fact, a local binding competition between the long-distance binding operator and a covert *de re* variable; thus, we do not expect any effect for IND-Mandarin, as desired. The *qu* cases, however, arise due to *qu*’s peculiar semantics, which *deletes* perspective-taking. For IND-Mandarin, I will argue this takes the form of a 1st person context-deleter: [qu α]<sup>c</sup> = [[α]<sup>c[AUTH(c)]</sup>]. For LOG-Mandarin, I will present the closest analog: *qu* introduces an obligatory OP-LOG<sub>j</sub><sup>u</sup>, thus preventing long-distance binding outside of it.

I will begin first with the *lai* puzzle, which is a bit more manageable. After reviewing some basic properties of Mandarin rationale clauses, I will faithfully follow Anand and Hsieh (2005), and show how one can motivate a local binding account for the *lai* effects. I will then consider the case of *qu*, which I will show imposes several complex conditions on its scope – non-*de se* readings, disallowance of indexicals, and lack of long-distance *ziji* binding. I will thus argue that the perspectival nature of *qu* in rationale clauses can be given a precise semantic signature.

### 3.4.1 Some properties of rationale clauses

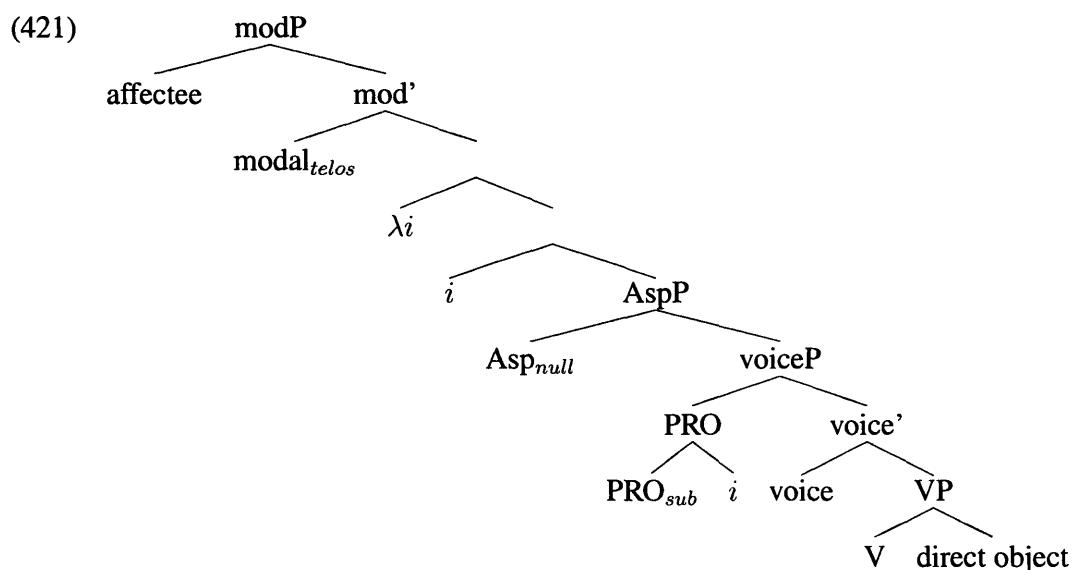
As shown above, Mandarin rationale clauses may either be null-headed or take one of two heads that are homophonous with the directionals: *lai* ‘come’ and *qu* ‘go’. They obligatorily show a subject gap, as demonstrated above by the ungrammaticality of *John* within the clause. They also optionally show an object gap, as above. When an object is present, the sentence expresses causation between two sub-events:

- (419) Bill mai-le yi-ben shu (∅, lai, qu) taohao John  
 Bill buy-mkperf one-CL book (∅, come, go) please John  
 ‘Bill bought a book to please John.’

While Li and Thompson (1981) classify these forms as serial verb constructions, it is important to note that adjunct extraction out of the rationale clauses is ungrammatical, in contrast to more canonical SVCs:

- (420) a. Bill mai-le yi-ben shu kan  
 Bill buy-PERF one-CL book read  
 ‘Bill bought a book to read it’  
 ‘Bill bought a book and read it.’
- b. Bill mai-le yi-ben shu zenyang kan  
 Bill buy-PERF one-CL book how read  
 \*‘What method did Bill buy a book to read it by that method?’  
 ‘For what method did Bill buy a book and read it by that method?’

As the sentences above show, while both a purposive and a coordinative reading are available in the simplex sentence, when an adjunct *wh*-word is inserted in the second verbal complex, only the coordinative meaning is possible. This suggests that there is in fact structural ambiguity between the two forms. If Mandarin *wh*-adverbs must move for interpretation (Tang, 1994), rationale clauses must be adjuncts, hence subject to the CED Huang (1982). I will assume that they are AspP-sized adjuncts, headed by a teleological modal:



Let me spell out the argument structure assumptions I am making above. First, following Marantz (1984), Kratzer (1996), I will assume that the external argument is not part of a verb predicate, but is merged via the special functor *voice*. Thus, a simple transitive verb will be of type  $\langle e, \epsilon\kappa t \rangle$ , as follows:

(422)  $[\text{read}]^g = \lambda x \lambda e \lambda i. \text{read}(e) \wedge \text{theme}(e, x) \wedge \text{in}(e, \text{WORLD}(i)).$

Hence, *read book* will be of type  $\langle \epsilon \kappa t \rangle$ ; this is one of voice's arguments:<sup>17</sup>

(423)  $[\text{voice}]^g = \lambda P_{\epsilon, \kappa t} \lambda x. [\lambda e \lambda i'. \text{agent}(e, x) \wedge P(e, i') = 1].$

In contrast to the suggestions in Chapter 1, I will assume here that PRO is in fact a special *de se* element: a functor from an index to its author:

(424)  $[\text{PRO}]^g = \lambda i. \text{AUTH}(i).$

This will become relevant when I consider the possibilities of *de se* readings of elements under *qu*. Thus, the denotation of the voiceP *[PRO i] read [book i]* is:

(425)  $\lambda e \lambda i'. \text{agent}(e, \text{AUTH}(i')) \wedge \text{read}(e) \wedge \text{theme}(e, \iota y. \text{book}(y)(i')) \wedge \text{in}(e, \text{WORLD}(i')).$

For compositionality purposes, I will assume the presence of an  $\text{Asp}_{\text{null}}$  head which simply performs existential closure over the event variable:<sup>18</sup>

(426)  $[\text{Asp}_{\text{null}}]^g = \lambda P_{\epsilon \kappa t}. [\lambda i. \exists e P(e, i) = 1.]$

All in all, this produces the following proposition as the denotation of a rationale clause such as *read the book*:

(427)  $\lambda i'. \exists e [\text{agent}(e, \text{AUTH}(i')) \wedge \text{read}(e) \wedge \text{theme}(e, \iota y. \text{book}(y)(i')) \wedge \text{in}(e, \text{WORLD}(i'))].$

Following Nissenbaum (2005), I will assume that the teleological modal in purposive clauses is a function from propositions to events (plus the intensional argument of the event):

(428)  $[\text{modal}_{\text{telos}}]^g = \lambda p_{\kappa t} \lambda x \lambda e \lambda i. \forall i' \text{ compatible with the goals of } e \text{ in } i [p(i') = 1] \wedge (\text{affectedness condition on } x).$

Note that in the above denotation I have included an additional individual argument, which in the structure I gloss as the “affectee.” As I will argue in the following subsection, this element is responsible for part of the implications *lai/qu* produce; for now, ignore it. I will assume that compatible indices with respect to a goal-oriented event induce that the AUTHS of the indices are the *de se* counterparts of the agent of the event. This is justified based on the observation that PRO in rationale clauses is interpreted *de se*:

(429)  $S_1$ : [Answering-machine scenario]. I think my<sub>dere</sub> voice is too raspy. I go buy some cough drops for the person whose voice is that bad.

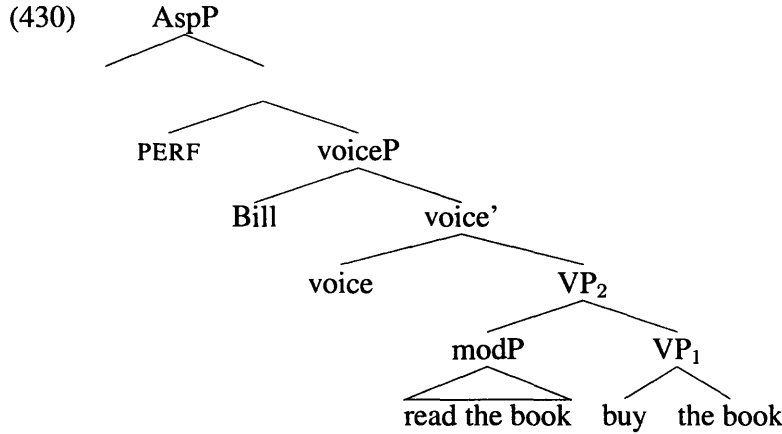
$S_2$ : I buy some cough drops for self-medication.

I bought the cough drops [ $\text{modal}_{\text{telos}}$  PRO to take them]. [#  $S_1$ ; ✓  $S_2$ ]

<sup>17</sup>I am combining *voice* with its arguments via function application alone; I am unaware of any justification in Kratzer (1996) or Pylkkänen (2002) for event identification (i.e., function composition) *per se*, and will not pursue it here. However, I do not think this choice point is relevant to the discussion below.

<sup>18</sup>Things are a bit simpler in an intensional system, where we need not introduce overt index arguments. The rationale clause is thus simply a voiceP which the modal takes as an argument. The problem here is that the value of PRO cannot be fixed without reference to an index, which must be present in the overt syntax.

Thus, the structure above is of type  $\langle \epsilon \kappa t \rangle$ , just like a VP. A saturated VP and a rationale clause may thus combine via predicate modification, assuming the adjunction of the rationale clause to the VP:



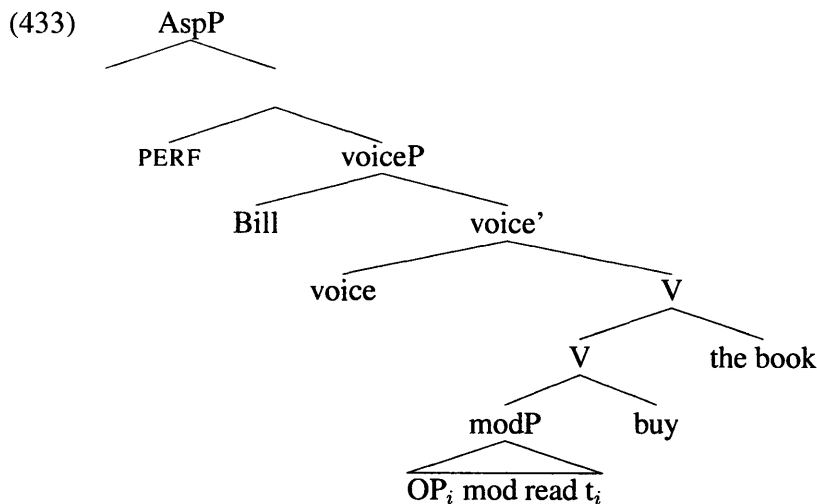
(431)  $[[VP_2]^g = \lambda e \lambda i. [[modP]^g(e)(i) \wedge [VP_1]^g(e)(i) = \lambda e \lambda i. [buy(e) \wedge theme(e, \iota y. book(y)(i)) \wedge in(e, WORLD(i))] \wedge [\forall i' \text{ compatible with the goals of } e \text{ in } i [ \exists e [agent(e, AUTH(i')) \wedge read(e) \wedge theme(e, \iota y. book(y)(i')) \wedge in(e, WORLD(i'))]]]]]$

That is,  $VP_2$  describes a predicate of events which are book-buying events which have the goals of book-reading by the agent's *de se* counterparts. This serves to explain the compositional interpretation of rationale clauses.

Although they will not concern me here, purposive clauses with gaps are simply the result of rationale clauses that have undergone null-operator movement of the internal argument of the verb. Indeed, such gaps are island sensitive, suggesting movement:

(432) \* Bill mai-le yi-ben shu (lai, qu,  $\emptyset$ ) rang John xiangxin [Mary kan-le  $e_i$  de Bill buy-PERF one-CL book (come, go,  $\emptyset$ ) make John believe [Mary read-PERF  $e$  DE shuofa] claim]  
 'Bill bought a book to make John believe the claim that Mary read (it).'

If object gaps are product of operator movement, the result structure will be of type  $\langle e, \epsilon \kappa t \rangle$ . But this is the type of a *verb*; hence, following Nissenbaum (2005), I will assume that these structures adjoin to the verb:



This will serve to derive the correct truth-conditions for these environments.

### 3.4.2 On the interpretive differences between *lai*- and *qu*-headed clauses

Having sketched the syntactic structure I will now justify the existence of the “affectee” argument. Although the interpretive effects of *lai* and *qu* for the purpose clause have been argued to be minimal (e.g., Li and Thompson (1981); Pollard and Xue (2001); Pan (1997)), Anand and Hsieh (2005) note that they introduce an implication regarding the *affectedness* of some entity *x* by the rationale clause event:

(434)  $S_1$ : I have just remarked how much I love John’s statue; I own John’s statue.

$S_2$ : I have just remarked about my apathy regarding John’s statue.

- a. Bill na yizhi lai da John-de diaoxiang  
 Bill take chair COME hit John-POSS statue

‘Bill took a chair to hit John’s statue (*which would affect me*).’ [ $\checkmark S_1, \#S_2$ ]

- b. Bill na yizhi qu da John-de diaoxiang  
 Bill take chair GO hit John-POSS statue

‘Bill took a chair to hit John’s statue (*which would not affect me*).’ [ $\#S_1, \checkmark S_2$ ]

In a context where it is common ground that the speaker loves John’s statue ( $S_1$ ), the use of *qu* in ((434)b) is infelicitous (unless he is being ironic). In contrast, *lai* is infelicitous when the speaker’s apathy regarding John’s statue is common ground. Thus, *lai* introduces the implication that the entity *x* is affected by the event in its scope, while *qu* introduces the implication that *x* is *unaffected* by the event.

This can be shown more clearly in imperatives such as ((435)b), where simultaneous to the command to help the speaker is the implication that the speaker is not vested in the outcome of the event (e.g., this is a bureaucratic hoop that one must jump through):

- (435) a. shei lai bang wo jie jue zhe-ge wenti  
 who COME help me solve this-CL problem  
 ‘Someone help me solve this problem (to my benefit)!’  
 b. shei qu bang wo jie jue zhe-ge wenti  
 who GO help me solve this-CL problem  
 ‘Someone help me solve this problem (not that I want to do this)!’

While the speaker is understood as the affected entity in matrix contexts, when the rationale clause is embedded under an attitude verb, the attitude holder (but not the embedded subject) may additionally be the affected entity:

- (436) Mary renwei Bill na yizhi lai da John-de diaoxiang.  
 Mary think Bill take chair COME hit John-POSS statue  
 a. ‘Mary thinks Bill took a chair to hit a statue of John (*which would affect Mary*).’  
 b. ‘Mary thinks Bill took a chair to hit a statue of John (*which would affect me*).’<sup>19</sup>

When the matrix subject in ((436)) is replaced with a quantifier, attitude-holder affectedness implication is licit, but is itself quantified over. That is, the affected entity can be bound, and hence is a variable.

- (437) mei-ge nuhai dou renwei Bill na yizhi qu da John-de diaoxiang.  
 every-CL girl DOU think Bill take chair GO hit John-POSS statue  
 a. ‘Every girl thinks Bill took a chair to hit a statue of John (*which wouldn’t affect any girl*).’  
 b. ‘Every girl thinks Bill took a chair to hit a statue of John (*which wouldn’t affect me*).’

The implications introduced by *lai/qu* survive negation, question formation, and conditionalization, suggesting that it is a presupposition, in general globally accommodated.

- (438) Tests for presuppositional status of affectness implication  
 a. NEGATION: It is not the case that X  
 bing bu shi Mary renwei Bill na yizhi lai da diaoxiang  
 not.at.all NEG COP Mary think Bill take chair COME hit statue  
 ‘It’s not the case that Mary thinks that Bill took a chair to hit the statue (which would have affected me).’  
 b. POLAR QUESTION  
 John renwei Bill na yizhi lai da diaoxiang ma  
 John think Bill take chair COME hit statue Q  
 ‘Does John think Bill took a chair to hit the statue (*which would affect me*)?’

<sup>19</sup>This reading is somewhat difficult to get without proper context; note that questions make it much more salient; see ((438b)). I am not clear why this should be, and leave it for future research.

c. CONDITIONALIZATION

ruguo John renwei Bill na yizhi lai da diaoxiang de-hua, namo John jiu  
 if John think Bill take chair COME hit statue if, so John then  
 zhende man bende  
 really rather stupid

'If John thinks that Bill took a chair to hit the statue, then John is really very stupid  
 (and Bill hitting the statue would have affected me).'

However, it may be locally accommodated as well:

- (439) ruguo John zhende xihuan na-zun diaoxiang de-hua, namo ta hui renwei Bill na yizhi  
 if John really like that-CL statue IF, so he will think Bill take chair  
 (lai/\*qu) da-le na-zun diaoxiang  
 (come/\*go) hit-PERF that-CL statue  
 'If John really likes that statue, then he will think that Bill took a chair to hit it.'

This suggests that the affectedness contribution that *lai* and *qu* create is a counterfactual pre-supposition:

- (440)  $[[lai_{telos}]^g = \lambda p_{\kappa t} \lambda x \lambda e \lambda i. \forall i' \text{ compatible with the goals of } e \text{ in } i [p(i') = 1] \wedge \partial(\forall i' [i' \text{ closest compatible with } i_0 \wedge p(i')=1 \Rightarrow x \text{ is affected in } \text{WORLD}(i')])]$ .<sup>20</sup>

Note that I have chosen to represent *lai* and *qu* as teleological modals themselves; this will be used later when I discuss how they affect the *de re* concept generators. While much of the presupposition above is open to debate (given how poorly we understand the precise felicity conditions for *lai* and *qu*), crucial to our analysis is the free affectee position of these two elements. It is the syntactic work that this items does that I will examine next.

### 3.4.3 The Analysis: Disjoint reference as binding competition

In this section, I put the affectedness variable to work, showing how its existence coupled with a preference for local-binding can account for the inability of 1st and 2nd person subjects to bind into *lai*-clauses in LOG-Mandarin. As IND-Mandarin does not show this effect, I will not discuss it further until the end of the section; thus, wherever I claim something is ungrammatical, it means for LOG-Mandarin speakers.

The explanation begins with the interesting restriction that when a 3rd person element long-distance binds *ziji*, it cannot also serve as the affectee of *lai*. I demonstrate how this Disjoint Reference Condition is accountable under the *De Re* Blocking Effect. I then pursue the intuition that the lack of 1st/2nd binding of *ziji* arises because it is impossible for 1st/2nd to bind *ziji* without violating the Disjoint Reference Condition.

<sup>20</sup>I am sidestepping here the lengthy debates regarding the nature of counterfactuals. See Fintel(2001), Kratzer(2002), Kaufmann(2005) for discussion.

**Disjoint reference between *lai/qu*'s variable and *ziji***

Let us begin with the data. Example ((441)) is exactly like ((436)), except John has been replaced by *ziji*. When *ziji* is bound short-distance, both the speaker and Mary can serve as the affectee ((441)a,b). However, when *ziji* is bound long-distance by Mary, only the speaker can be the affectee; a reading where a statue of Mary is hit and the speaker is asserting that Mary would be affected is unavailable.<sup>21</sup>

- (441) Mary renwei Bill na yizhi lai da ziji-de diaoxiang  
 Mary think Bill take chair COME hit self-POSS statue
- a. 'Mary thinks Bill took a chair to hit a statue of Bill (*which would affect me*).'
  - b. 'Mary thinks Bill took a chair to hit a statue of Bill (*which would affect Mary*).'
  - c. 'Mary thinks Bill took a chair to hit a statue of Mary (*which would affect me*).'
  - d. \* 'Mary thinks Bill took a chair to hit a statue of Mary (*which would affect Mary*).'

Anand and Hsieh (2005) dub this data pattern the Disjoint Reference Condition:

- (442) **Disjoint Reference Condition:** The affectee of *lai/qu* and *ziji* cannot co-refer.

They propose that the Disjoint Reference Condition arises from binding competition, as follows. The referential possibility  $[3_i \dots lai_i \dots ziji_i]$  can be produced from two distinct representations, one with local binding by the affectee variable of *lai* and one with non-local binding by the OP-LOG introduced by the matrix attitude verb:

- (443) Binding configurations for  $[3_i \dots lai_i \dots ziji_i^{[log]}]$
- a.  $[3 \text{ OP-LOG}^u_i [ \underbrace{3 \dots [lai \ x_i \ \lambda_j]}_{\text{LOCAL BINDING}} [ \underbrace{ziji_j^{[log]}}_{\text{LOCAL BINDING}} ] ] ]$
  - b.  $[3 \text{ OP-LOG}^u_i [ \underbrace{3 \dots [lai \ x_i \ \lambda_j]}_{\text{NON-LOCAL BINDING}} [ \underbrace{ziji_i^{[log]}}_{\text{NON-LOCAL BINDING}} ] ] ]$

But this is precise the signature of the *De Re* Blocking Effect, which I have already shown to be active in LOG-Mandarin. Thus, we predict that local binding is preferred, even though it cannot license *ziji*'s [log] features, and hence the entire structure is ill-formed. Furthermore, this account correctly predicts that if *ziji* is replaced by a pronoun (which does not have a [log] specification), there is no disjoint reference condition:

- (444) mei-ge nuhai dou renwei Bill na yizhi qu da ta-de diaoxiang.  
 every-CL girl DOU think Bill take chair GO hit she-POSS statue
- 'Every girl thinks Bill took a chair to hit a statue of her (*which wouldn't affect any girl*).'
  - 'Every girl thinks Bill took a chair to hit a statue of her (*which wouldn't affect me*).'

<sup>21</sup>The test is a context where the speaker first asserts/implicates that he would be unaffected by the hitting of the statue; in such a context, the sentence is deemed infelicitous with *lai*. Crucially, in such contexts ((436)) is still considered felicitous (but not if Mary's unaffectedness is also asserted).



### Generalizing to 1<sup>st</sup>/2<sup>nd</sup> person

At this point, we can return to the central puzzle framed at the outset: why can't 1st and 2nd person elements antecede *ziji*? The obvious proposal (which I will push) is that the Disjoint Reference Condition is necessarily violated when 1st/2nd person elements bind into a *lai*-clause. Why might this be?

The tricky case is clearly that of 2nd person subjects, since when there is a 1st person subject, the only available binder for *lai*'s variable is the subject (hence the Disjoint Reference Condition is necessarily violated). Indeed, the very existence of a default "indexically-dependent" interpretation of *lai*'s hidden variable by the speaker suggests that 2nd person subjects should behave exactly like 3rd person subjects. But they do not – they cannot bind into *lai*-clauses.

Anand and Hsieh (2005) note, however, that when there is a 2nd person matrix subject in general, the affectee cannot be the speaker; it must be the addressee:

(445) Overt 2<sup>nd</sup> subject forces 2<sup>nd</sup> affectedness:

ni na yizhi lai da John-de diaoxiang  
you take chair come hit John-POSS statue

'You took a chair to hit John's statue (*which would affect you/\*me*).'

This suggests that what is at work is a discourse principle setting the P-center. In default contexts, as we saw, it can be the speaker. However, when there is a 2nd person matrix subject, it must refer to that subject. Anand and Hsieh (2005) formulate the following discourse rules on P-center valuation:

(446) P(erspectival)-Center discourse rules

- a. **Discourse Rule #1:** In unmarked contexts, the P-center is the speaker.
- b. **Discourse Rule #2:** When a speech-act-participant (SAP) is the matrix subject, the P-center is that SAP.
- c. The P-center can be a non-SAP in marked contexts, where the 3rd person is established by discourse to be the perspective-holder (e.g., narrative).

It is Discourse Rule #2 which explains the problem with 2nd person subjects: 1st person P-Centers necessarily cannot appear with 2nd person matrix subjects.

The above account naturally explains why IND-Mandarin shows none of these effects. As for IND-Mandarin *ziji*-binding is achieved via semantic means, local binding intervention simply does not happen. Note that for these speakers there *is* an affectedness presupposition; it simply does not interfere with the normal mechanisms of context-overwriting.

#### 3.4.4 The *qu* Blocking Effect

While we have an explanation for why *lai* can block long-distance binding, we do not have an explanation for why *qu* does as well. Recall that for both dialects of Mandarin and for all persons *qu* simply blocks long-distance binding. Why might this be?

Coonsider first the case of IND-Mandarin, for which *ziji* binding is simply the case of overwriting. It does not seem clear how that could be interfered with. However, there is one way: if *qu* itself introduced an overwriting operator. Perhaps this is what is at work: *qu* obligatorily introduces a shifting operator, in which case *ziji* must refer to the agent of the event: the statue-hitter in the above examples. This would suffice to explain why long-distance binding is out. However, it also predicts that *ziji* underneath *qu* can be interpreted *de se* (assuming it's long-distance). Surprisingly, it cannot:

- (447)  $S_1$ : Bill deliberately hit himself last night.  
 $S_2$ : Bill hit himself with a chair (he thought he was hitting someone else).
- a. Bill<sub>i</sub> na yizhi lai da ziji  
 Bill<sub>i</sub> take chair COME hit self  
 'Bill took a chair to hit himself [ $\checkmark S_1, \#S_2$ ] (*de se*).'
- b. Bill<sub>i</sub> na yizhi qu da ziji  
 Bill<sub>i</sub> take chair GO hit self  
 'Bill took a chair to hit himself [ $\# S_1, \checkmark S_2$ ] (non-*de se*).'

The above examples highlight yet another semantic function of these directionals – they force particular interpretations of proforms in their scope. In the case of *lai*, short-distance *ziji* must be interpreted *de se*, while *qu* forces short-distance *ziji* to be interpreted non-*de se*. It should be pointed out that this applies to pronominals as well:

- (448)  $S_1$ : Bill deliberately hit his<sub>de se</sub> father last night.  
 $S_2$ : Bill hit his father with a chair (he thought he was hitting the father of *that* guy).
- a. Bill<sub>i</sub> na yizhi lai da ta<sub>i</sub> de baba  
 Bill<sub>i</sub> take chair COME hit he DE father  
 'Bill took a chair to hit his father [ $\checkmark S_1, \#S_2$ ] (*de se*).'
- b. Bill<sub>i</sub> na yizhi qu da ta<sub>i</sub> de baba  
 Bill<sub>i</sub> take chair GO hit he DE father  
 'Bill took a chair to hit his father [ $\# S_1, \checkmark S_2$ ] (non-*de se*).'

In this sense, we are back in familiar waters, those charted in the previous chapters when considering anti-logophoric or obviation effects, wherein a pronominal could *not* be interpreted *de se*. Recall that our solution to this was to specify that the attitude verb itself fixed the concept generator  $\Gamma$  to be “selfless,” such that it would assign no element the SELF function AUTH(i). The same step seems to be necessary for *qu*, which I will claim selects for selfless concept generators:

- (449)  $\llbracket qu_{telos} \rrbracket^g = \lambda P_{ese, \kappa t} \lambda x \lambda e \lambda i. \exists \Gamma \in GC_{selfless} [\forall i' \text{ compatible with the goals of } e \text{ in } i [ P(\Gamma(agent(e))(i'))(i') = 1] \wedge \partial(\forall i' [ i' \text{ closest compatible with } i_0 \wedge P(\Gamma(agent(e))(i'))(i') = 1 \Rightarrow x \text{ is unaffected in } WORLD(i') ])$ .

However, note that in this case, there can be no competition between a dedicated *de se* form and *de re* pronouns; there *is* no way of producing a *de se* reading in this context at all. In contrast, *lai* forces a *de se* interpretation of pronouns in its scope. This what we saw in Chapter 1 with regard to Percus & Sauerland's Argument from Only. What was done there pragmatically (i.e., restrict the set of contextually salient relations to nothing), I propose is here done via the attitude predicate itself. To wit, *lai* selects for a concept generator that forces SELF:  $\forall x, i, \Gamma(x)(i)(x) = \text{AUTH}$ .

$$(450) \quad \llbracket lai_{telos} \rrbracket^g = \lambda P_{ese, \kappa t} \lambda x \lambda e \lambda i. \exists \Gamma \in GC_{self} [\forall i' \text{ compatible with the goals of } e \text{ in } i [P(\Gamma(agent(e))(i'))(i') = 1] \wedge \partial(\forall i' [i' \text{ closest compatible with } i_0 \wedge P(\Gamma(agent(e))(i'))(i') = 1 \Rightarrow x \text{ is affected in } \text{WORLD}(i')])].$$

With these facts in place, let me return to the possibility of an obligatory shifting operator. As can now be seen, this will predict that underneath *qu* it is possible to obtain *de se* readings of *ziji* (which would be long-distance). However, this does not occur, as we can see above. I would like to propose that this suggestion is almost correct. Instead of diagonalizing, I would like to claim that *qu* obligatorily selects for a context-parameter *deleter*:

$$(451) \quad \llbracket OP_{auth}^{del} \alpha \rrbracket^{c, g} = \llbracket \alpha \rrbracket^{c[\text{AUTH}(c)/\emptyset], g}$$

With this in place, long-distance *ziji* is impossible within the scope of *qu*, as desired. Note, as well, that this account immediately predicts that *wo* 'I' should also be disallowed within the scope of *qu*. This prediction is, surprisingly, true:

$$(452) \quad \text{John jintian na yizi } \{\emptyset, *qu\} \text{ da wo de taioxiang} \\ \text{John today take chair } \{\text{come, go}\} \text{ hit I DE statue} \\ \text{'John took a chair today to hit a statue of me.'}$$

Temporal indexicals, however, are perfectly acceptable underneath *qu*, as are 2nd person indexicals for IND-Mandarin speakers:

$$(453) \quad \text{John jintian na yizi } \{\emptyset, qu\} \text{ da } \{\text{zuotian, ni}\} \text{ de taioxiang} \\ \text{John today take chair } \{\text{come, go}\} \text{ hit } \{\text{yesterday, you}\} \text{ DE statue} \\ \text{'John took a chair today to hit a statue } \{\text{from yesterday, of you}\}.'$$

Thus, *qu* does not simply disallow all indexicals, only 1st person ones, plus *ziji*. Assuming that they are in fact both dependent on the same coordinate of the context for their reference allows a natural explanation for this conjunction of ungrammaticalities.

What about LOG-Mandarin, which also shows *qu*'s blocking effect? First, it is important to note that this dialect does *not* allow 2nd person indexicals within the scope of *qu* either Zhu (1984):

$$(454) \quad \text{John jintian na yizi } \{\emptyset, qu\} \text{ da } \{\text{zuotian, } *^L \text{ni}\} \text{ de taioxiang} \\ \text{John today take chair } \{\text{come, go}\} \text{ hit you yesterday DE statue} \\ \text{'John took a chair today to hit a statue } \{\text{from yesterday, } *^L \text{of you}\}.'$$

Thus, *qu* shows an obligatory Blocking Effect, even in the absence of a long-distance *ziji* that is bound within its scope. Following the system above for IND-Mandarin, I would like to propose that *qu* obligatorily selects for an OP-LOG<sub>*j*</sub><sup>*u*</sup>, thus capturing why 1st and 2nd person elements are banned within its scope. But, again, we have the same problem as above: the operator clearly does not allow long-distance *ziji* in its scope. My fix here will be a little less tidy than that above: I will assume that *qu* selects the CENTER sister of OP-LOG<sub>*j*</sub><sup>*u*</sup> be a referentially null element  $\otimes$ . It is important that this term is of type *e*, and that it can compose with the operator without causing the machinery to grind to a halt. I will simply assert that  $\otimes$  has these properties. Clearly, this is rather stipulative, but there is an intuition behind it: what *qu* does is somehow distance its complement from all possible conscious centers; in the terminology of Sells (1987), it sets the PIVOT and SELF to nothing. I am not certain how best to capture this intuition, but the machinery in this section is the first stab at trying to capture this perspectival distancing. The distancing role of *qu* is multifold: it indicates unaffectedness, blocks *de se* readings, and removes the possibility of *de se* anaphora. Here, these are the product of independent principles operating in principle; presumably they should be related, and I leave it to future research to reveal how best this should be done. One important point that bears explicit mention is that the present theory predicts that the effects on pronominals may be ameliorated by a higher attitude verb, which may introduce a SELF concept (with respect to that higher attitude verb). This is, in fact, correct:

(455) Bill gets very drunk, and can't recall the next morning exactly what went on the night before. S<sub>1</sub>: Bill thinks, "I hit my father with a chair last night."

S<sub>2</sub>: Bill thinks, "I must have hit that guy's father with a chair last night."

S<sub>3</sub>: Bill thinks, "That guy must have hit my father with a chair last night."

Bill<sub>*i*</sub> renwei ta<sub>*i*</sub> na yizhi qu da ta<sub>*i*</sub> de baba

Bill<sub>*i*</sub> think he take chair GO hit he DE father

'Bill thought he took a chair to hit his father [ $\checkmark$ S<sub>1</sub>,  $\checkmark$ S<sub>2</sub>, ?S<sub>3</sub>].'

Scenarios S<sub>1</sub> and S<sub>2</sub> differ in how the lower *ta* is read, either *de se* or *de re*. Both are possible, and the former I take to be an indication that the concept generator abstractor  $\lambda G_1$  provided by think is binding the lower *ta*, thus allowing a *de se* reading. Note that when the higher *ta* is read non-*de se*, the lower one may be read *de se*, but it somewhat awkward. I take this to be a reflection of the dispreference for iterating concept generators. It is important to note that even in these situations, long-distance reflexivization is out. In this sense, an independence between antilogophoricity and long-distance binding blocking actually makes correct predictions. I am not sure how to unify these two effects while still allowing for them to be violated independently.

Before moving on, I would like to consider what the *qu* facts might tell us regarding the status of obligatorily-controlled PRO. Recall that in Chapter 1 I showed that, as it was possible to derive *de se* readings as a sub-species of *de re* ascription, the obligatoriness of *de se* ascription for PRO could be analyzed simply as a particular kind of requirement on the *de re* concept it is evaluated with respect to (in particular, that it is evaluated with respect to the AUTH concept). However, note that *qu* quite explicitly rules out the possibility of *de se* ascription of pronominals in its scope.

Thus, were PRO to be treated on par with a pronoun read *de re* under the AUTH concept, we would predict that in fact PRO were disallowed under *qu*, or were not read *de se*. As in fact PRO is acceptable in these cases, and is read *de se*, we now have an argument against assimilating the obligatory *de se* ascription of PRO to *de re* ascription. Thus, PRO is either bound by a logophoric operator or, as above, contains a bound index. While it is rather difficult to rule out the logophoric binder, recall that it is possible to have both a long-distance bound *ziji* and PRO within the same clause:

- (456) John<sub>i</sub> renwei [Bill<sub>j</sub> xiang [PRO<sub>j</sub> gei ziji<sub>i/j</sub> guahuazi]]  
 John think [Bill want [PRO give self shave]]  
 ‘John<sub>i</sub> thinks Bill wants to shave {him<sub>i</sub>, himself<sub>j</sub>}.’

Were long-distance binding and the interpretation of PRO instances of binding via the same operator (i.e., were PRO and *ziji* both marked [log]), this would be impossible, given that OP-LOG<sub>j</sub><sup>u</sup> is an unselective binder. Thus, either PRO is bound by another type of operator, or it is not bound at all.

### 3.4.5 Summing Up

In this section, I have considered a complex series of interpretive pressures imposed by the directionals *lai* and *qu* when they head rationale clauses. I have argued that *lai* and *qu* should be treated as teleological modals which take an individual specifier, and presuppose that the individual would be affected by the event in the scope of the modal. I demonstrated that with this affectee argument syntactically specified, it is possible to explain both why LOG-Mandarin speakers show an inability to bind *ziji* long-distance by a 1st or 2nd person element across *lai* and why IND-Mandarin speakers do not. I then turned to the case of *qu*, which uniformly blocks long-distance *ziji*. I analyzed this as a case of obligatory deletion, forcing long-distance *ziji* to be undefined within the scope of *qu*. Finally, I concluded with a discussion of how *lai* and *qu* additionally specify what kind of concept generator they take, thus demonstrating that, at least in this case, antilogophoricity is not necessarily the product of competition with a dedicated *de se* form, but of demands of the attitude verb.

## 3.5 Conclusion

In this chapter I have considered the distribution of Mandarin long-distance *ziji*, which I have argued is best analyzed as both a shifted indexical and an operator-bound variable – though in different languages. I have shown that these two languages, IND-Mandarin and LOG-Mandarin, show consistent differential properties with regard to the licensing and interpretative range of *ziji*. In this section, I would like to consider several open areas for this research programme.

### Extensional *ziji*

First, recall that it is possible for long-distance *ziji* to be bound from outside a relative clause, at a seeming unbounded depth:

- (457) John<sub>i</sub> da-le na-zhi yao-le na-zhi chi-le gongji ziji<sub>i/j/k/m</sub> de laoshu<sub>m</sub> de  
John hit-PERF that-CL bite-PERF that-CL eat-PERF attack self DE mouse DE  
mao<sub>k</sub> de gou<sub>j</sub>  
cat DE dog  
'John<sub>i</sub> hit the dog<sub>j</sub> that bit the cat<sub>k</sub> that ate the rat<sub>m</sub> that attacked ziji<sub>i/j/k/m</sub>

While the antecedent must be animate, it need not be the holder of a relevant *de se* attitude:

- (458) a. \*zhe-zun diaoxiang<sub>i</sub> zhuangdao-le na-zhi gongji ziji<sub>\*i/j</sub> de gou<sub>j</sub>  
this-CL statue fall-down-PERF that-CL attack self DE dog  
'That statue fell on the dog that attacked itself.'
- b. S<sub>1</sub>: Zhangsan can identify Fred, the man who saved his life by "That man saved my life!"  
S<sub>2</sub>: Zhangsan is trapped in a burning building and faints. When he wakes up, he is safely outside. He thinks he was lucky, but in fact was saved by a passerby.  
Zhangsan<sub>i</sub> zai mei you jian-guo jiu-le ziji ming de na-ge ren  
Zhangsan again not have see-PERF save-PERF self life DE that-CL person  
'Zhangsan<sub>i</sub> didn't see again the person<sub>j</sub> who saved his<sub>i/j</sub> life.' (Pollard and Xue, 2001) (✓S<sub>1</sub>, ✓S<sub>2</sub>)

I would like to argue that these "extensional" cases are licensed in a different fashion than the *de se* forms I have been discussing. I have three arguments. First, these extensional forms are bindable out of *qu*-headed rationale clauses, in pointed contrast to the intensional forms:

- (459) Zhangsan<sub>i</sub> zai mei you jian-guo na yizhi qu da ziji<sub>i/j</sub> de na-ge ren<sub>j</sub>  
Zhangsan again not have see-PERF take chair go hit self DE that-CL person  
'Zhangsan<sub>i</sub> didn't see again the person<sub>j</sub> who took a chair to hit {him<sub>i</sub>, himself<sub>j</sub>}.'

Second, these forms are not subject to the *De Re* Blocking Effect, even for LOG-Mandarin speakers:

- (460) John<sub>i</sub> jian-guo gei ta<sub>i</sub> jiang-le Bill<sub>j</sub> da-le ziji de na-ge ren  
John<sub>i</sub> see-PERF to him<sub>i</sub> tell-PERF Bill<sub>j</sub> hit-PERF self DE that-CL person  
'John<sub>i</sub> saw the man<sub>j</sub> who told him<sub>i</sub> that Bill<sub>k</sub> hit him<sub>i/j/k</sub>.'

Finally, extensional and intensional *ziji* do not show NO INTERVENING BINDER constraints with respect to each other:

- (461) John<sub>i</sub> jian-guo shuo Bill<sub>j</sub> gei ziji de mama ziji de shu de na-ge ren  
John<sub>i</sub> see-PERF say Bill<sub>j</sub> hit-PERF self DE that-CL person  
'John<sub>i</sub> saw the man<sub>j</sub> who said that Bill<sub>k</sub> gave his<sub>i/j/k</sub> mother his<sub>i/j/k</sub> book.'

However, extensional *ziji*s show NO INTERVENING BINDER with respect to each other:

- (462) John<sub>i</sub> jian-guo [mai-le [ziji de mama gei ziji mai-le de na-ben shu] de  
John see-PERF [sell-PERF [self DE mother for self buy-PERF DE that-CL book] DE  
na-ge ren<sub>j</sub>]  
that-CL person]  
'John<sub>i</sub> saw the man<sub>j</sub> who sold the book that his<sub>j</sub> mother bought for him<sub>j</sub>.'  
'John<sub>i</sub> saw the man<sub>j</sub> who sold the book that his<sub>i</sub> mother bought for him<sub>i</sub>.'  
\* 'John<sub>i</sub> saw the man<sub>j</sub> who sold the book that his<sub>j</sub> mother bought for him<sub>i</sub>.'  
\* 'John<sub>i</sub> saw the man<sub>j</sub> who sold the book that his<sub>i</sub> mother bought for him<sub>j</sub>.'

I would thus like to suggest that this extensional *ziji* obtains its value semantically, from a parameter of the evaluation sequence different from that which serves as the value for IND-Mandarin *ziji*. What exactly this parameter is, and how its value is fixed is a question I leave for future research.<sup>22</sup>

### Expanding the typology

In this chapter I have concentrated on Mandarin *ziji*. One clear question is how the present proposal can be extended to capture long-distance reflexives more generally. In order to consider the range of issues that generalization entail, I will consider three specific cases: Malayalam, Japanese, and Icelandic.

The first case I will consider is Malayalam *Taan*, which following Mohanan(1992), Jayaseelan(1997) can be characterized as a 3rd person, singular, human long-distance anaphor. One of the central puzzles of *Taan* binding is accounting for its peculiar distribution: it must take a sentential antecedent (or logophoric referent), but it is subject to Principle B:

- (463) \* John<sub>i</sub> Tan<sub>\*i</sub>-ikkə oru sammaanam Nakli  
John self-to one present give  
'John gave a present to self.'  
(464) John<sub>i</sub> paRaññu [Mary<sub>j</sub> Tan<sub>i/\*j</sub>-ne sneehikkuNNu eNNə]  
John said [Mary self-ACC loves COMP]  
'John said Mary loves {him, \*herself}.'

As expected, when long-distance bound, *Taan* is interpreted *de se* (thus the above example is incompatible with scenarios where Raman is talking about himself *de re*). *Taan* also shows no *De Re* Blocking Effect:

- (465) [[Mary<sub>j</sub> Tan<sub>i/\*j</sub>-ne sneehikkuNNu eNNə] Bill awan-ooDə paRaññu eNNə] John<sub>i</sub>  
[[Mary self-ACC loves COMP] Bill him-to said COMP] John  
wicarriccu  
thought

<sup>22</sup>In this regard, it is worthwhile to note that the PIVOT position of Sells (1987) tripartite system of logophoric predicates thus cannot be the sole seat of *ziji*s value, as Cole et al. (2001a); Pollard and Xue (2001) might suggest.

‘John<sub>i</sub> thought that Bill<sub>j</sub> told him<sub>i</sub> that Mary loves him<sub>i/j</sub>.’

Thus, it would appear that Malayalam patterns with IND-Mandarin in taking a semantic route to long-distance reflexivization. The Condition B effects would be straightforwardly accounted for, as *Taan* is a pronoun under this proposal. Indeed, one reasonable source for this assimilation is the fact that Malayalam *Taan* shows the Blocking Effect (Jayaseelan 1995):

- (466) John<sub>i</sub> wicaaricu [ {Mary, kuTTikaL, \*ñaan, \*Nii} Tan<sub>i</sub>-ne sneehikkuNN-illa ennə]  
 John thought [ {Mary, children, I, you} self-ACC loves-NEG COMP]  
 ‘John<sub>i</sub> thought that {Mary, the children, \*I, \*you} do(es) not live him<sub>i</sub>.’ (Jayaseelan 1998, ex. 4)

Thus, this would suggest that *Taan* is simply a 1st person indexical, like *ziji*, and that long-distance binding is the product of shifting operator (which the 1st and 2nd person elements are sensitive to). However, there are two crucial problem with this assimilation. First, as seen above, *Taan* cannot refer to the 1st person (either in matrix or subordinate position). Perhaps this means that, in complementary distribution with 1st/2nd forms, *Taan* must be in the scope of a shifting operator. The second problem, however, is a bit more serious: *Taan* only takes 3rd person antecedents:

- (467) \* {ñaan, Nii} paRaññu [Mary<sub>j</sub> Tan<sub>i/\*j</sub>-ne sneehikkuNNu eNNə]  
 {I, you} said [Mary self-ACC loves COMP]  
 ‘{I, you} said Mary loves {me, you}.’

Under the context-overwriting approach, this is surprising, since the only constraint on the presence of an operator is what the attitude verb dictates. Were we to maintain the connection between *Taan*-binding and *ziji*-binding, the following stipulation will have to be made:

- (468) MALAYALAM RULE FOR OPERATOR INSERTION  
*att* V<sub>att</sub> OP<sub>auth</sub> is wellformed iff. *att* is 3rd person.

Note that this is, in essence, an appeal to BINDING UNDER MATCHING without actually describing it in terms of binding. I thus take this stipulation to be highly undesirable, since we are replicating something that appears to be otherwise uniformly licensed cross-linguistically. I do not, however, know how to make this any less stipulative. Note, however, that were we to adopt von Stechow’s position and treat long-distance anaphors uniformly as logophors, we would face a similar dilemma – if *Taan* is specified 3rd person, then why is there no *De Re* Blocking Effect? Correspondingly, if it is 1st person, why can’t 1st/2nd person elements trigger logophoric binding?

In contrast to *Taan* and *ziji*, both Japanese long-distance *zibun* and Icelandic long-distance *sig* show *De Re* Blocking effects, thus suggesting that they are, in fact, operator-bound.<sup>23</sup>

- (469) a. John<sub>i</sub>-ga [Mary-ga kare<sub>\*i/j</sub>-ni [zibun<sub>i</sub>-ga tensai da to] it-ta to]  
 John-NOM [Mary-NOM he-DAT [self-NOM genius be COMP] say-PAST COMP]  
 omot-ta  
 think-PAST

<sup>23</sup>The Icelandic data comes from personal fieldwork with 3 informants.



'John<sub>i</sub> thought that Mary said to him<sub>\*i/j</sub> that he<sub>i</sub> is a genius.' (Zushi 2001, p. 300, ex. 107a)

- b. John<sub>i</sub>-ga [Mary-ga kare<sub>\*i/j</sub>-no hahaoya-ni [zibun<sub>i</sub>-ga tensai da to]  
 John-NOM [Mary-NOM he-GEN mother-DAT [self-NOM genius be COMP]  
 it-ta to] omot-ta  
 say-PAST COMP] think-PAST

'John<sub>i</sub> thought that Mary said to his<sub>i/j</sub> mother that he<sub>i</sub> is a genius.' (Zushi 2001, p. 301, ex. 107d)

- (470) a. Bill segir John segDi honum aD Tu elskaDir sig  
 Bill said John told.SUBJ him.DAT that you loved.SUBJ self  
 'Bill<sub>i</sub> said that John<sub>j</sub> told him<sub>\*i/k</sub> that you loved him<sub>i</sub>.'
- b. Bill segir John segDi moDim hans aD Tu elskaDir sig  
 Bill said John told.SUBJ mother.DAT his that you loved.SUBJ self  
 'Bill<sub>i</sub> said that John<sub>j</sub> told his<sub>i/j/k</sub> mother that you loved him<sub>i</sub>.'

It has often been pointed out that Japanese *zibun* can refer to a SOURCE of communication, even if the source is not the subject of the sentence:<sup>24</sup>

- (471) Max<sub>i</sub>-wa Alice<sub>j</sub>-kara [Pat-ga zibun-o kiratte-i-ru to] kii-ta  
 Max-TOP Alice-from [Pat-NOM self-ACC hate-mkasp-PRES COMP hear-PAST  
 'Max heard from Alice that Pat hates {her, \*him}.' (Oshima, 2004, p. 66, ex. 163)

Thus, it seems that their licensing conditions are independent of the subject. However, it is important to note that, as with Yoruba, these elements are interpreted *de te*; thus, they cannot be used if John is unaware that Bill is talking about himself (Bill, on the other hand, might be unaware).<sup>25</sup> I take this to mean that the ADDR coordinate of the context is to be defined more loosely, since in these cases that is what is serving as the CENTER for OP-LOG.

A final note, in passing. One important finding regarding *sig*-binding was the existence of subcommanding long-distance binders:

<sup>24</sup>This alone will not explain their distribution, given that *zibun*'s distribution is crucially tied to empathic concerns (Kuno 1972), such as whether the agent or recipient in a transfer of possession construction is more identified with by the speaker:

- (1) Boku-wa Hanako-ni okane-o {yat-ta, \*kure-ta}  
 I-TOP Hanako-DAT money-ACC {give-PAST, give-PAST}  
 'I gave Hanako money.'

Thus, in the above example, *kure* is unacceptable for a 1st person donor. Similar facts hold with respect to long-distance *zibun*:

- (2) Max<sub>i</sub>-wa [zibun-ga Pat-ni hon-o {yat-ta, kure-ta} koto]-o oboete-i-ru  
 Max-TOP [self-NOM Pat-DAT book-ACC {give-PAST, give-PAST} COMP]-ACC remember-ASP-PRES  
 'Max remember that he gave Pat a book.' (Oshima, 2004, p. 30, ex. 69b)

While such conditions are clearly important, they are presumably additional presuppositions of *zibun*, and not important in determining its reference *per se*.

<sup>25</sup>The Japanese judgements come from Shiochi Takahashi, Sachiko Kato (p.c.).

- (472) skoDun Siggu er aD sig vani hoefileika  
 opinion Sigga's is that self lacks.SUBJ talents  
 'Sigga's opinion is that she is not talented enough.' (Maling, 1984, p. 222, ex. 150)

Within the present approach this is not surprising: an attitude verb (via an operator) binds *sig*; the actual form of the subject is unimportant, as long as it expresses an attitude. However, this approach predicts that such cases of *sig* binding should be treated as instances of variable binding, and hence show obligatory sloppy identity. As Thrainsson (1991) discovered this is not the case:

- (473) skoDun Jóns er aD sig<sub>i</sub> vanti haoefileika og TaD er skoDun Peterus lika  
 opinion John's is that self lacks-SUBJ talents and it is opinion Peter's too  
 'John<sub>i</sub>'s opinion is that he<sub>i</sub> isn't talented enough and it is Peter's opinion too that {John,  
 ??Peter} isn't talented enough.' (Thrainsson 1991, p. 60 ex. 32)

This is surprising if what licenses these forms is an operator below the attitude verb. Instead, I am forced to posit that this is an instance of P-center binding in both conjuncts. Further research is necessary to determine if this is, indeed, a viable analysis of these cases.

### Final Issues

Finally, the present proposal is not strongly predictive regarding what may serve as a long-distance anaphor. Since Faltz (1977), it has been taken as a given that long-distance anaphors were monomorphemic. While Nichols (2001) presents cases in Ingush that violate this generalization, it does appear to be an overwhelming truth. Why should this be? Many movement stories (e.g. Cole et al. (1990b); Huang and Tang (1991)) have sought to explain these facts as a conspiracy between the defective referential features of anaphors and the special movement privileges that bare monomorphemic heads are allowed. However, if movement is at work in these cases, why the differential behavior of the *lai* and *qu* headed rationale clauses with respect to *ziji* licensing? A further puzzle this account must deal with is why some languages have a Blocking Effect and not others. Recall that for both IND-Mandarin and LOG-Mandarin we observed a blocking effect. For the former, I think this is rather natural; the operator is monkeying around with the semantic element which 1st and 2nd person elements take reference from. For the logophoric cases, this seems less likely. Following Sells (1987), it has been argued that this is a case of PIVOT restrictions meeting something like empathy – the 1st or 2nd person forms must be the pivot within the clause containing them (see Cole et al. (2005) for a version of this). However, it is again unclear *why* Mandarin shows the PIVOT restriction while Icelandic, Japanese, and Italian does not. Movement theories, as we saw, tied this to the nature of a language's verbal system; both Malayalam and Mandarin lack verbal agreement, and hence show Blocking Effects, since Infl nodes inherit *ziji*'s features. However, as we have seen, the association of blocking with subjects is dubious, and hence it is not clear to what extent this generalization is explanatory.

Thus, in conclusion, while one very open area for the dual-route to LDR theory offered here is how each route is associated with a given language, it is simultaneously unclear what the typological picture one is attempting to capture is. On the other hand, there is one strong prediction of the present theory: To the extent a language is like IND-Mandarin, it will have the Blocking Effect (or

indexical shift), since long-distance binding overwrites the context parameter. If a language does not have the Blocking Effect, I predict that it will be constrained by the DE RE Blocking Effect. This, at least, is a falsifiable prediction that can help move this theory forward.



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