Indexiphors:
Notes on embedded indexicals, shifty agreement, and logophoricity

Amy Rose Deal

University of California, Berkeley

1. Introduction

One of the prescient observations of Speas (2000) – a gold mine of such things – is that the apparent shiftiness of embedded person indexicals in Navajo may in some way be connected to the fact that agreement is involved. In example (1), for instance, we know that the embedded clause is not quoted, since it contains a description (*hataaɬii* 'the singer') which is read *de re*. We might expect, therefore, that 1st person subject agreement in this clause should behave as it would in a matrix clause, by indicating that the referent of the subject is the overall speaker. But this is not what happens. Instead, the embedded 1st person subject agreement indicates that the referent of the embedded subject is also the referent of the matrix subject.

(1) Context: Kii does not know that Hastiin Begay is a singer. He says to me, *Hastiin Begay Tóta'di bidééh niséyá* [lit. 'I went to meet Mr. Begay in Farmington']. Later, at a ceremony at which Hastiin Begay is singing, I say to you:

Kii [*pro* hataaɬii Tóta'di bidééh niséyá] ní.
Kii [*pro* singer Farmington-at 3sg-go:toward Perf.1sgS.go] 3sgS.say
Kii$_i$ said that he$_i$ went to meet the singer in Farmington.
lit. Kii said that I went to meet the singer in Farmington.
(Speas 2000, example (12))

If we take 1st person agreement to indicate that the silent pronominal subject of the lower clause is a 1st person indexical, then these data suggest that the reference of that indexical has shifted. The focus of this paper is on that 'if'. Is "shifty agreement" in 1st person a reliable guide to the presence of a shifted 1st person indexical *pro*, whether in subject position (e.g. Podobryaev 2014) or elsewhere in the clause (e.g. Sundaresan 2012)? Following the lead of Anand (2006) (as well as typological and descriptive work such as Culy 1994, Curnow 2002), I will argue that it is not. Elements that may control what is canonically 1st person agreement include not only 1st person indexicals but also a class of elements I will

call *indexiphors*. An indexiphor is like a logophor and unlike an indexical in that it must be bound by an operator in the left periphery of an embedded clause (Koopman & Sportiche 1989, Speas 2004); this binding is subject to intervention constraints. At the same time, it is like an indexical in the agreement that it controls. Accordingly, some such cases have been described as featuring 'first person logophoricity' (Curnow 2002).[1]

The recognition of this class of elements turns out to have important typological and theoretical consequences for the treatment of indexical shift and "shifty agreement". In principle, a description like the one just given could be the prologue to a theory of embedded indexicals like the one laid out by von Stechow (2003), according to which all apparent indexical shift in fact involves bound, non-indexical pronouns that come to agree like indexicals due to morphological feature transmission under binding. Working in such a theory, one might claim that all cases of putative indexical shift really feature indexiphors in the sense I have just defined. This is not the tack I will pursue. Rather, with Anand (2006), I will maintain that indexiphors and true shifted indexicals are both possible in natural language, and that the two show distinct empirical profiles. Most notably characteristic of indexiphors (and logophors), but not true shifted indexicals, is obedience to the *De Re* Blocking Effect (Anand 2006); most notably characteristic of true shifted indexicals, but not indexiphors (or logophors), is obedience to the Shift Together constraint (Anand & Nevins 2004).[2] [3]

(2) *De Re Blocking* [obeyed by indexiphors but not shifty indexicals]
Every bound *de se* element must be *de re* free.

(3) *Shift Together* [obeyed by shifty indexicals but not indexiphors]
If one indexical of class Ψ picks up reference from context *c*, then all indexicals of class Ψ within the same minimal attitude complement must also pick up reference from context *c*. (The following are classes of indexicals: 1st person, 2nd person, person, locative, temporal.)

The recognition of the two classes of elements, each with its characteristic behaviors on these tests, helps to explain a series of empirical contrasts brought to light in the recent literature on embedded pronouns and agreement. First, while some authors have reported obedience to the Shift Together constraint for embedded 1st persons (Anand & Nevins 2004, Deal 2014, Park 2016), others have reported patterns of 1st person marking that does not reflect the Shift Together effect (Evans 2006, Nikitina 2012b, Podobryaev 2014, S.

[1] Other terminology has been used as well: e.g. Anand (2006) calls indexiphors 'local logophors'. I prefer the term 'indexiphor' as it applies equally well to elements triggering 1st and 2nd person agreement and avoids ambiguities in technical usage of the term 'local' – e.g. 'local' as '1st/2nd person', or 'local' as 'structurally close'. Note that I will focus almost exclusively on 1st person indexiphors here, with only some brief remarks about their second person counterparts in section 5.

[2] This formulation of De Re Blocking is essentially Anand's. Anand does not define "*de re* free"; I will make a proposal below for how this might be done, together with a small refinement of (2).

[3] This is my formulation of Shift Together; Anand & Nevins's (2004) is simply that "all indexicals within a speech-context domain must pick up reference from the same context." Reasons to prefer the formulation given here are detailed in Deal (2017). I take the reformulation to be a friendly amendment, as Anand and Nevins' theory itself predicts only the version used here.

Sundaresan p.c.). Second, in embedded clauses where the Shift Together effect does *not* hold – that is, where two instances of 1st person agreement within the same embedded clause may index distinct individuals – two patterns have been reported: some authors have reported that higher material is more likely to receive a shifty reading than is lower material (Evans 2006, Nikitina 2012b) whereas others report that higher material is less likely to receive a shifty reading than is lower material (Sudo 2012, Shklovsky & Sudo 2014). In what follows, I will argue that a theory that recognizes both indexiphors and first person pronouns as sources of "shifty 1st" is best equipped to explain these contrasts and overall handle the range of crosslinguistic data in a constrained way.

The rest of this paper is divided into three main parts. In the first (§2), I review Anand's case for indexiphors, which draws on evidence from Amharic; indeed, as we will see, Amharic shows evidence of containing both indexiphors and true shifty indexicals, with distinct empirical profiles. In the second (§3), I take the lessons of the Amharic case study and apply them to data sets from Papuan languages and from Mishar Tatar, focusing in particular on apparent counterexamples to the Shift Together constraint. What I aim to show is that the recognition of indexiphoricity yields insight into the cases at hand that would not be gotten by simply moving to a more permissive theory of shifty indexicals. Finally, in the third part (§4) I return to the question of "shifty agreement" specifically and propose that the operators that bind indexiphoric pronouns may directly reprogram 1st person agreement morphology within their domain, assigning a 1st person paradigm to indexiphors while simultaneously denying it to true 1st person indexicals. Section 5 offers a brief conclusion and a few remarks on an extension of the indexiphor proposal to elements triggering 2nd person agreement.

2. Indexiphors in Amharic

Anand 2006 makes an initial case for indexiphors as a source of "shifty agreement", based on evidence from Amharic. In this section, I present his arguments, and then discuss various ways in which this view of Amharic helps to explain contrasts between this language and (other) languages allowing indexical shift.

2.1 Prologue: a proposal for indexical shift in Amharic

Verbs in Amharic morphologically index features of both the subject and the object; possessed nouns morphologically index features of the possessor. I will refer to this morphology as 'agreement'.[4] As discussed by Schlenker (1999, 2003) and Anand (2006), subject, object, and possessor agreement in Amharic may be "shifty". Thus, examples (4) and (5) allow readings both where the *pro* arguments controlling 1st person agreement refer to the speaker, and readings where they co-refer with the superordinate subject, *John*.[5]

[4]That is, as our present concern is about the nature of pronouns (specifically *pro*), I will set aside the distinction between agreement proper (with *pro*) and clitic-doubling (of *pro*). See Kramer (2014) for discussion of Amharic object markers and argumentation in support of the clitic-doubling view.

[5]Example (4) has been discussed by several authors; I present it here in the orthographic form and with the glossing conventions used by LaTerza et al. (2015).

(4) John [*pro* dʒägna nä-ññ] yɨ-l-all.
John [*pro* hero COP-1SG.S] 3SGM.S-say-AUX.3SGM.S
a. John says that I am a hero.
b. John says that he is a hero.

(5) John [[*pro* lij-e]$_{subj}$ *pro*$_{obj}$ ay-ittazzoza-ññ] ala
John [[*pro* son-1sg] *pro* NEG.3s-obey.MKIMPERF-1SG] say.PERF.3sm
a. John$_i$ says his$_i$ son will not obey him$_i$.
b. John$_i$ says his$_i$ son will not obey me.
c. John$_i$ says my son will not obey him$_i$.
d. John$_i$ says my son will not obey me.

Schlenker (1999) argues that such data need not result from quotation and concludes that they instead instantiate indexical shift. On his analysis, the embedded null pronoun in (4) is an indexical – indeed, what he takes to be Amharic's version of an ordinary 1st person pronoun – which may, essentially, choose freely whether to draw from the overall utterance context (reading (a)) or from a shifted context introduced by the embedding verb (reading (b)). Crucially, this free choice can be made in different ways for different occurrences of indexicals within a single attitude report. This approach makes the four readings in (5) fall out straightforwardly, assuming the presence of two embedded 1st person indexicals. Either indexical may draw either on the matrix context or on the quantification over contexts Schlenker takes to be introduced by attitude verbs, producing four readings.[6]

2.2 De Re Blocking

A challenge for Schlenker's approach arises in Amharic examples where the interpretation of *pro* arguments controlling 1st person agreement is not similarly free. Example (6) (originally from Leslau 1995) attempts what is expected, on Schlenker's theory, to be an innocent manipulation – putting together the possibility of a potentially shifty 1st person subject, as in (4), with a potentially shifty 1st person object, as in (5). Anand & Nevins (2004) observe that the interpretation of this example is restricted: it permits a reading where only the subject is "shifty", (6a), but not one where only the object is "shifty", (6b). (Readings where both or neither are "shifty" are ruled out by Condition B.)

(6) John [*pro*$_{subj}$ *pro*$_{obj}$ al-ittazzoza-ññ] ala.
John [NEG.1s-obey.mkimperf-1sO] say.PERF.3sm
a. ✓ John$_i$ says he$_i$ will not obey me.
b. ✗ John$_i$ says I will not obey him$_i$.

Somehow, the presence of a c-commanding non-shifty 1st person *pro* interferes with whatever is responsible for the "shifty agreement" in object position, ruling out the (b) reading. What is the nature of this restriction?

[6] For details, see Schlenker 1999, 2003, 2011.

Anand (2006) provides an answer that connects these facts to two other types of contrasts, both concerning (as he argues) binding and *de se* interpretation – but not indexicality. The first comes from Percus & Sauerland's (2003) work on the interpretation of pronouns in dream reports in English. Within a dream report, a pronoun may show *de se* interpretation by referring to the 'dream self' – the person that the dreamer identifies, in his dreaming, as himself. Percus & Sauerland observe that a pronoun picking out the dream self cannot be c-commanded by another pronoun that merely refers (*de re*) to the dreamer.[7] In both examples in (7), the complement of *dream* contains two pronouns referring in some way to John. Example (7a), with no c-command relationship between the pronouns, is well-formed; example (7b), with the *de re* pronoun c-commanding the *de se* pronoun, is ill-formed.

(7) Context (Percus & Sauerland 2003): John's 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 Bill's perspective. He sees the couple approaching the altar...

   a. John dreamed that his$_{self}$ grand-daughter was marrying him.

   b. # John dreamed that he was marrying his$_{self}$ grand-daughter.

Connecting these facts to the matter of Amharic *pro*, Anand establishes that "shifty" *pro* controlling 1st person agreement must be interpreted *de se* in Amharic.[8] The ill-formedness of (7b) thus presents a parallel to the ill-formedness of (6) on interpretation (b). In both cases, a *de se* pronoun is ruled out under c-command by a *de re* pronoun. Furthermore, in both cases, the c-commanding subject is similar to the would-be *de se* object – both control 1st person agreement in (6), and both ultimately pick out counterparts of John in (7). In (7), however, indexicality is clearly not involved.

A second similar pattern comes from the distribution of logophors in Yoruba. Yoruba contains two 3rd person pronouns, *ó* (weak; possessive form *rẹ̀*) and *òun* (strong); *òun*, but not *ó/rẹ̀*, must be read *de se* (Adesola 2006, 2081, Anand 2006, 56). Like in (7), the *de se* element (*òun*) is ruled out precisely when it is c-commanded by a pronoun that refers to the matrix subject *de re*, (8). Again, removing or reversing the c-command between the two pronouns obviates the effect, (9).

(8) Olú$_i$ sọ pé ó$_{j,*i}$ rí bàbá òun$_i$
   Olu say that he(weak) see father his(strong)
   Olu$_i$ said that he$_{j,*i}$ saw his$_i$ father (Adesola 2005, 185)

[7] For experimental confirmation of this claim, see Pearson & Dery (2013).

[8] Bibliographical notes: Anand (2006) cites Schlenker (1999) for the original observation, which indeed he makes (p. 97); however, in the August 2000 revised version of that work, Schlenker retracts his claim, noting that 'my informant finds the sentences almost impossible to assess (although it is not clear why)' (p. 126). (See also Schlenker (2003, 68).) Anand's data set does not precisely match Schlenker's, however, suggesting that Anand confirmed the relevant data points independently with his native speaker consultants.

(9) a. Olú$_k$ sọ pé [bàbá rẹ̀$_{k,j}$] ti rí [ìyá òun$_k$]
Olu say that [father his(weak)] ASP see [mother his(strong)]
Olu$_k$ said that his$_{k,j}$ father has seen his$_k$ mother (Adesola 2005, 199)

b. Olú$_i$ sọ pé òun$_i$ ti rí ìwé rẹ̀$_{i,j}$
Olu say that he(strong) ASP see book his(weak)
Olu$_i$ said that he$_i$ has seen his$_{i,j}$ book (Adesola 2005, 200)

Like the data from English dream reports, these Yoruba data feature no person indexicals. The generalization that covers all three cases, Anand proposes, should be stated in terms of binding:

(10) *De Re Blocking Effect* (after Anand 2006, 52; to be refined)
All bound *de se* elements must be *de re* free.

In Yoruba, *òun* is always a bound *de se* element; it must be bound by a logophoric operator in the left periphery. (This, per Anand, is essentially what it is to be a logophor.[9]) The impact of the De Re Blocking Effect should be understood as follows: on the impossible reading of (8), *òun* is c-commanded by a pronoun (*ó*) that refers *de re*, and both pronouns ultimately pick out counterparts of the same individual (Olú). This is disallowed. Likewise, in (7), the pronoun picking out the dream self is also a bound *de se* element (Percus & Sauerland 2003). Thus the same reasoning as in (8) applies to (7b). Anand suggests that the ultimate origin of the blocking effect may be found in the *de se* element's need to be bound by a logophoric operator, together with the fact that the *de re* element constitutes an intervening potential binder. Of course, not just any *de re* element will intervene, as (8) shows on its well-formed, disjoint reference reading; only one that is appropriately similar to the *de se* element (for instance in picking out counterparts of the same individual) will trigger the blocking effect. (We return to this point below.)

Returning, now, to the Amharic data in (4)-(6), Anand proposes that a similar style of analysis as for the English and Yoruba cases may be applied. The *pro* elements that control 1st person agreement in Amharic come in two varieties. One is indeed an ordinary 1st person indexical, but the other is what I have called above an *indexiphor*. (Anand's term is *local logophor*.) Like an indexical 1st person pronoun, the indexiphor triggers 1st person agreement. This makes for an important morphological similarity with indexical pronouns. Yet there are both syntactic differences and semantic ones. Semantically, indexical pronouns depend only on the context (which may be represented as an argument of the interpretation function). Following standard Kaplanian accounts, relative to a context c, the first person pronoun refers to the author of c. Indexiphors, on the other hand, are bound elements: they depend not on the context but on a variable assignment.[10]

[9] More generally, a key role for left-peripheral operators is a central theme in the literature on logophoric syntax; see Koopman & Sportiche 1989, Speas 2004, Safir 2004, Adesola 2006, Baker 2008.

[10] I assume that the interpretation function $[\![\cdot]\!]$ takes four arguments: a linguistic expression, a variable assignment g, an index i, and a context c. Assignments are (possibly partial) functions from $|N$ to individuals; indices and contexts are tuples $< x, y, l, t, w >$, where x and y are individuals, l is a location, t is a time, and w is a world. No constraint is imposed that x speaks to y at l at t in w (i.e. 'improper contexts' are allowed). For discussion, see Deal (2017).

(11) Two elements triggering '1st person agreement' in Amharic
   a. $[\![1sg]\!]^{g,i,c} = Author(c)$
   b. $[\![xphor_n]\!]^{g,i,c} = g(n)$

Syntactically, first person indexicals do not bear indices and are therefore not bindable. Indexiphors (like logophors), on the other hand, require binding by a left-peripheral logophoric operator OP^{log}. This amounts to saying that:

(12) a. Every indexiphor must be coindexed with a c-commanding occurrence of OP^{log}, and
   b. $[\![OP^{log}{}_n\ \alpha]\!]^{g,i,c} = \lambda x.[\![\alpha]\!]^{g^{[x/n]},i,c}$ [i.e. OP^{log} triggers predicate abstraction]

The bound-variable interpretation of indexiphors gives rise to a *de se* interpretation without any need for context-shift or similar mechanisms: abstraction over the indexiphor yields an intensional property-type denotation for the embedded clause, which allows it to serve as the argument for an attitude verb which quantifies over world-individual pairs.[11] (See Pearson 2015, Patel-Grosz To appear for recent discussion.)

Participation in a binding dependency also has the effect of rendering the indexiphor subject to De Re Blocking. In the well-formed parse of (6), shown in (13), no potential binders intervene between the indexiphor subject and its binder OP^{log}. The indexiphor, as a bound *de se* element, picks out *de se* counterparts of John; the *pro* object, as an ordinary 1st person indexical, refers to the speaker (*de re*).

(13) John [$OP^{log}{}_1$ *pro-subj*$_1$ *pro-obj* al-ittazzoza-ññ] ala
   John [**xphor** 1sg NEG.1s-obey.mkimperf-1sO] say.PERF.3sm
   John$_i$ said that he$_i$ will not obey me.

In the ill-formed parse in (14), on the other hand, we see an indexiphoric version of De Re Blocking. With the shift from a logophor to an indexiphor comes an expansion in the class of potential interveners: here it is a 1st person *pro* that serves as a *de re* blocker, intervening on the binding relationship between OP^{log} and the indexiphor – the subject and object *pro*s presumably counting as appropriately similar to one another in virtue of their shared paradigm of 1st person agreement.

(14) *John [$OP^{log}{}_1$ *pro-subj pro-obj*$_1$ al-ittazzoza-ññ] ala
   John [1sg **xphor** NEG.1s-obey.mkimperf-1sO] say.PERF.3sm
   ✗John$_i$ said that I will not obey him$_i$.

Amharic indexiphors also show a classic De Re Blocking effect where a 3rd person *de re* pronoun is the intervener. In (15), the embedded subject refers to John *de re*. The indexiphor in the c-command domain of this pronoun is ruled out, just as we saw in (7b) and (8).

[11] It should be noted that *de se* interpretation is expected both for indexiphors and for shifty indexicals (modulo potential application of the mechanisms discussed in Pearson 2015). Thus presence/absence of a *de se* requirement is not diagnostic of the difference between indexiphors and shifty indexicals. See Anand 2006 for extensive discussion of the multiple routes to *de se*.

(15) Context: John has a valuable rare book library. Recently, he has experienced a spate of thefts where the thief pretends to be a restorer coming to pick up a book; in many cases, the clerk at the desk simply hands the book over. In order to prevent this, John has invited a consultant to come in and change security policies. In order to test them, the consultant arranges for a mock-thief come in and vet the system, asking for a rare folio of *Hamlet*. The following day, John reviews security camera footage from the mock-theft. John [as a clerk] is actually one of the participants, though the video angle prevents identification of the clerks. When the video gets to him, he notices that the thief is being met with some skepticism. He says to the consultant, "The thief will not be able to get his hands on *Hamlet* now."

Question: How can the consultant report this to his mock-thief?

John [OP^{log}_1 *pro* [pro_1 meSiħaf-e] ay-səTT əTəh] alə
John [3sg [**xphor** book-1sg] neg.3sg-give-2smO] say.perf.3sm
John said that he would not give you his book.
(Anand 2006, 103)

The sentence may be salvaged, Anand shows, in a context where the embedded 3rd person subject *pro* refers to an individual other than John. Like in (8), it is not c-command by any old pronoun that matters for De Re Blocking, but only one that is appropriately similar (whether in the anchoring of its counterpart relation or in its shared paradigm of 1st person agreement) to the bound *de se* element.

On this basis, then, we can provide a first explicit statement of the relation at the core of De Re Blocking as follows, fleshing out Anand's proposal from (10):

(16) *De Re Bound/Free*
A referential expression α is *de re* bound in structure γ iff there is a referential expression β such that
a. β c-commands α in γ
b. β refers *de re*[12]
c. Either α and β refer (relative to a context, index, and assignment) to counterparts of the same individual, or α and β both control local person agreement.[13]
A referential expression that is not *de re* bound in γ is *de re* free in γ.

Note that this definition determines bound/free status with respect to a domain. This is desirable as it allows us to state the structural window within which *de re* elements constitute potential interveners: only between an indexiphor/logophor and its OP^{log} binder.

(17) *De Re Blocking Effect* (final version)
All bound *de se* elements must be *de re* free in the domain of their binding OP.

[12] Anand (2007, 6) suggests that the proper generalization is simply that β is not a dedicated *de se* element. It may receive a *de se* reading as a special case of *de re* interpretation; this does not cause it to cease functioning as a *de re* blocker.

[13] Note that this formulation makes it possible for a 2nd person indexical to serve as a *de re* blocker for a 1st person indexiphor; this seems to me likely to be necessary in view of the patterns discussed by Podobryaev (2014) and Akkuş (2018).

Circling back to the initial Amharic examples (4) and (5), this approach allows us to entertain, for the moment, a view of the data we have seen so far that in fact features no indexical shift at all. In (4), repeated below as (18), the unshifted reading features a 1st person indexical *pro*, while the "shifty" reading can be derived with the help of a *pro* indexiphor. In (5), repeated as (19), the four readings arise due to the possibility of parsing each *pro* either as an indexical or as an indexiphor. Since the pronouns do not stand in a c-command relationship, no De Re Blocking is incurred.

(18) John [*pro* dʒägna nä-ññ] yɨ-l-all.
John [1SG/XPHOR hero COP-1SG.S] 3SGM.S-say-AUX.3SGM.S
a. John says that I am a hero.
b. John says that he is a hero.

(19) John [[*pro* lij-e] pro_{obj} ay-ittazzoza-ññ] ala
John [[1SG/XPHOR son-1SG] 1SG/XPHOR NEG.3S-obey-1SG] say.PERF.3SM
a. John$_i$ says my son will not obey me.
b. John$_i$ says his$_i$ son will not obey me.
c. John$_i$ says my son will not obey him$_i$
d. John$_i$ says his$_i$ son will not obey him$_i$.

To sum up: by providing an explanation for why the readings of *pro* are more free in these examples than in (6) and (15), the indexiphoric theory of shifty agreement in Amharic avoids a point of overgeneration incurred by Schlenker's indexical shifting theory.

2.3 Locality

If indexiphors are always bound elements, we must consider what types of locality constraints (if any) are imposed on that binding. Admittedly, locality restrictions on binding are rare in the world of logophors; perhaps the only known example, outside of indexiphoric cases, comes from Bohnhoff's (1986) discussion of Yạg Dii.[14] In the binding literature more generally, though, we know of various cases in which a bound element and its binder are permitted to be no more than roughly a clause apart (Chomsky 1981). A condition of exactly this sort appears to be relevant in regulating the relationship between an indexiphor and its OP^{log} binder in Amharic.

[14]Yạg Dii is a Duru language of Cameroon. Bohnhoff's (1986) discussion suggests that logophors from the primary logophoric series cannot be bound across intervening attitude verbs in Yạg Dii, and that (i) thus requires local binding of *bìǹ*. (Note that there is no gender encoding in this pronoun that would rule out 'mother' as a possible antecedent.)

(i) Nà'á ∅ 'ọ̀d bà'á [Múúsà bà ∅ 'ọ̀ [bà **bìǹ** híí̤ lààlɨ́ kaalɨ́]]. *Yạg Dii*
mother she says.to father [Moses that he says [that LOG want to.go town.to]]
Mother tells Father that Moses says that he (Moses) wants to go to town. (Bohnhoff 1986, 118)

Bohnhoff (1986, §8.3) reports that Yạg Dii uses a distinct set of 'deeper level logophoric' forms to encode long binding.

As a prologue to the demonstration of the locality condition, it should be noted that attitude verbs in Amharic (as in Navajo and numerous other languages) do not all behave the same way as regards "shifty agreement" in their complement. The verb 'say' in Amharic allows this, as we saw above in (18), but the verb 'think' does not:

(20) John [*pro* jɨəgna n-ñň] yɨSəllig-all.
John [1SG/*XPHOR hero COP.PRES-1SG] think-3sm
a. John thinks that I am a hero.
b. ✗ John$_i$ thinks that he$_i$ is a hero.
(Anand 2006, 76)

The absence of reading (20b) means that potential parses featuring indexiphors and potential parses featuring true shifted indexicals are ruled out here. The impossibility of indexiphors presumably results from the fact that Amharic 'think' does not allow the left periphery of its complement to include OP^{log} (Speas 2004).[15]

What happens, then, if an Amharic 'say' report embeds a 'think' report? The verb 'say' allows OP^{log} in the left periphery of its complement. If indexiphors could be bound long-distance, we would expect that indexiphors inside the 'think' complement could be bound by this OP^{log} binder at the edge of the next clause up. But this is impossible: sentence (21) lacks the range of readings seen in (19), where the OP^{log} was able to attach at the edge of the minimal clause containing the indexiphor. There is a reading where both *pro* elements in the most deeply embedded clause refer to the overall utterer, (21a) (compare (19a)), but no reading where one *pro* maintains this reference while the other co-refers with the subject of 'say', (21b,c) (compare (19b,c)).

(21) Mary [$_{CP}$ John [$_{CP}$ [$_{DP}$ *pro* lij-e]$_{subj}$ *pro*$_{obj}$ ay-ittazzozo-ñň]
Mary [John [[son-1SG] NEG.3S-obey.IMPERF-1SO]
yiSallig-all] alaCC.
think.IMPERF-3SM] say.PERF.3SF
a. Mary said John thinks my son will not obey me.
(Mary said [John thinks [1SG's son will not obey 1SG]])
b. ✗ Mary$_m$ said John thinks her$_m$ son will not obey me.
(*Mary said [OP^{log} John thinks [XPHOR's son will not obey 1SG]])
c. ✗ Mary$_m$ said John thinks my son will not obey her$_m$.
(*Mary said [OP^{log} John thinks [1SG's son will not obey XPHOR]])
(Anand 2006, 102)

This pattern is captured if the 'mixed' readings in (19b,c) require one *pro* to be an indexiphor, just as we have posited, and indexiphors (like PRO) cannot be bound long-distance.

[15] Similar remarks will apply for indexical shift: Amharic 'think' does not allow its complement to contain context-shifting operators, either. That context-shifting operators and logophoric operators should pattern together follows on the theory proposed in Speas (2004), Sundaresan (2011, 2012) and Deal (2017), according to which speech verbs take syntactically larger complements than thought predicates (at least in some languages). The structural smallness of 'think' complements in Amharic can thus account for the absence of both types of operators.

Things are slightly different, however, for reading (19d). On this reading, both *pro* elements in the embedded clause refer to the matrix attitude holder. This reading can be obtained (as we posited above) by treating both *pro* elements as (locally bound) indexiphors. But that cannot be the end of the story, for if it were, we would not be able to handle a final way (21) can be interpreted:

(21) d. Mary said John thinks her$_m$ son will not obey her$_m$.

If indexiphors cannot be licensed long-distance, then this reading of (21) cannot feature indexiphors. It must, rather, feature 1st person indexical *pro*. But if this is so, then we find ourselves back at the idea that Amharic does indeed feature shifty indexicals. After all, we are considering a parse that includes 1st person indexical *pro*, but the reference of *pro* is not the overall utterer.

How can we add the possibility of true indexical shift into the description of Amharic while preserving the results from the indexiphors-only description? Certainly, if we handled shifty indexicals à la Schlenker – allowing individual indexicals to freely draw from the overall context or from a shifted one – we will be back to where we started. We will have lost our analysis of (6), not to mention (21b,c).[16] What we need instead is a theory of indexical shift that allows shift to take place in (21d), but rules it out in (6) and (21b,c). What is the difference? (21d) is the only case among these where all the 1st person indexicals within a given 'say' complement *shift together*. It is this behavior, indeed, that Anand & Nevins (2004) and Anand (2006) propose as a hallmark of true indexical shift.

(22) *Shift Together*
If one indexical of class Ψ picks up reference from context c, then all indexicals of class Ψ within the same minimal attitude complement must also pick up reference from context c. (The following are classes of indexicals: 1st person, 2nd person, person, locative, temporal.)

On their theory, indexical shift takes place when a shifty operator attaches in the complement of an attitude verb. This operator changes the context relative to which its complement is interpreted, drawing information relevant for the change from the index of interpretation.[17] The operator in (23), for instance, changes the context relative to which we interpret its complement α by overwriting the author coordinate of the original context with the author coordinate of the index.[18] (Note that the semantic effect of this operator is quite different from that of its counterpart OP^{log}, in that context modification rather than binding (assignment modification) is triggered; see (12).)

(23) $[\![\text{OP}_{\text{AUTH}}\ \alpha]\!]^{c,i,g} = [\![\alpha]\!]^{c^{Author_i/Author},i,g}$

[16] I leave (15) out of this list and return to it below in fn 21.

[17] The index is in turn quantified over by the attitude verb; see Deal (2017) for discussion of mechanics along with various refinements.

[18] This proposal rests on a notion of context modification: Let $c^{Val/Coord}$ be that context c' that is like exactly like c with the possible exception of the fact that $Coord(c') \neq Coord(c)$ (where *Coord* represents to some coordinate of contexts); and futhermore $Coord(c') = Val$. For a categorematic treatment of indexical shifting operators, see Deal (2017).

Given that 1st person pronouns simply draw their value from the Author coordinate of context (see (11)), every 1st person pronoun inside α will end up with a shifted interpretation. This is exactly what we need for (21d), which can now be parsed as follows (Anand 2006):

(21) d. Mary said John thinks her$_m$ son will not obey her$_m$.
(Mary said [OP_{AUTH} John thinks [1SG's son will not obey 1SG]])

But no such operator could help us obtain the missing readings in (6) and (21b,c), where some 1st person indexicals remain unshifted. Either the author coordinate of context has shifted for the interpretation of the embedded clause (because OP_{AUTH} is present), or it has not (because OP_{AUTH} is absent). If it has not shifted, all 1st person indexicals will refer to the overall utterrer. If it has shifted, all 1st person indexicals will refer to the subject of the attitude verb within whose immediate complement OP_{AUTH} attaches. Indexical shift gets us all-or-nothing behavior – it does not get us mixed cases.

2.4 Amharic in sum (and in crosslinguistic perspective)

The view we arrive at, following Anand (2006), is one where Amharic has *both* indexiphors and shifty indexicals. In a simple case like (18), repeated below, there are two routes to the "shifty" (b) reading. One features OP^{log} (a variable binder) and an indexiphor (a bound variable). The other features OP_{AUTH} (a context-shifter) and a true 1st person *pro* (an indexical).

(24) John [*pro* dʒägna nä-ññ] yɨ-l-all.
John [*pro* hero COP-1SG.S] 3SGM.S-say-AUX.3SGM.S
a. John says that I am a hero.
(John says [1SG is a hero])
b. John says that he is a hero.
i. John says [OP^{log}_i XPHOR_i is a hero]
ii. John says [OP_{AUTH} 1SG is a hero]

The two paths to "shifty" readings come apart in cases where an attitude report contains multiple instances of local person agreement, and some of these are not "shifty" (e.g. (6) and (21b,c)). In this case, only an indexiphoric parse is possible – a parse with indexical shift violates the Shift Together constraint. Likewise in a case like (25) (from LaTerza et al. 2015), where the most embedded clause contains two first person agreements, both of them "shifty" but with disjoint reference: the only possible parse contains an indexiphor. (Note here that the indexiphor is locally bound, in keeping with its locality requirements; the indexical is not subject to any such requirement.)

(25) Käbbädä$_K$ [mäskot-u$_W$ [pro_{subj} pro_{obj} al-ɨkkäfät$_W$-ɨlliññ]
Kebbede [window-DEF [NEG-open.IMPF.1SGS-1SGO]
al-ä] al-ä
say.PF-3MSG.S] say.PF-3MSG.S
Kebbede$_k$ said the window said it will not open for him$_k$.
(Kebbede said [OP_{AUTH} the window said [OP^{log}_i XPHOR_i will not open for 1SG]])

The two paths also come apart in cases where the operator, whatever it might be, would need to be outside the minimal clause containing the pronoun (e.g. (21d)). In this case, only an indexical-shifting parse is possible – a parse with indexiphors violates the locality condition on indexiphoric binding. (Note that true indexical shift does not involve binding at all.) At the same time, two factors that do *not* differentiate among the two parses are *de se* interpretation and control of 1st person agreement.[19]

In typological perspective, one immediate outcome of the recognition of indexiphoricity in Amharic is an explanation for certain contrasts between "shifty" behavior in this language versus in languages like Zazaki (Anand 2006), Nez Perce (Deal 2014, 2017), or Korean (Park 2016). These languages systematically lack "mixed" readings of clausemate embedded first person elements. Thus the relatively restricted interpretation of Nez Perce (26) contrasts with the four-way ambiguity of Amharic (19):

(26) Ne-'níc-em pee-∅-ne 'in-haama-na,
1SG-older.sister-ERG 3/3-tell-TAM 1SG-husband-ACC
['iin-im ciq'aamqal hi-twehkey'k-e 'iin-e].
[1SG-GEN dog 3SUBJ-chase-TAM 1SG-ACC]

a. My sister$_s$ told my husband$_h$ that her$_s$ dog chased her$_s$.
b. ? My sister$_s$ told my husband$_h$ that my dog chased me.[20]
c. ✗ My sister$_s$ told my husband$_h$ that my dog chased her$_s$.
d. ✗ My sister$_s$ told my husband$_h$ that her$_s$ dog chased me.

These facts suggest that indexiphors/OP^{log} are not available in Nez Perce; the language has only ordinary indexicals and a shifty operator OP_{PERS} (Deal 2014).[21]

(27) $[\![\text{OP}_{\text{PERS}}\ \alpha]\!]^{c,i,g} = [\![\alpha]\!]^{c^{Author_i/Author,\ Addr_i/Addr},i,g}$

In languages containing such an operator, we expect that long-distance shifting should be allowed; true indexical shift is not subject to a clause-locality constraint. This is clearly seen in Korean example (28), where first person indexical *na-lul* 'me' may find an antecedent two clauses up (among other possibilities discussed by Park 2016) (cp. Amharic (21d), (25)):

[19] An interesting point for further investigation concerns the facts about plural interpretation described by LaTerza et al. (2014): *pro* controlling 1st person shifty agreement in Amharic can behave as a truly semantically plural element. It is possible that this behavior is uniquely possible when *pro* is indexiphoric rather than indexical; empirical investigation is required. (LaTerza et al. do not consider an indexiphoric analysis.)

[20] This reading is slightly disprefered in favor of reading (a); Nez Perce speakers often prefer indexical shift. However there is a clear distinction in consultant reactions to this interpretation versus (c)/(d), which are entirely unavailable.

[21] This operator differs from OP_{AUTH} only in that it shifts both addressee and author parameters of context. This leads to the expectation that second person indexicals should shift together with first person indexicals, and vice versa. Anand (2006) in fact argues for OP_{PERS} in Amharic, and makes use of shift together behavior between first and second persons to rule out an indexical-shift parse of (15). In this example, a parse of possessive *pro* as a 1st person indexical is not possible because the clause also contains an unshifted 2nd person indexical. Thus, OP_{PERS} must not be present in the structure.

(28) John-i Seoul-eyse [$_{CP}$ Bill-i yeki-eyse [$_{CP}$ Mary-ka na-lul *Korean*
John-Nom Seoul-at [Bill-Nom here-at [Mary-NOM I-ACC
cohahanta]-ko malhayssta]-ko malhayssta.
like-C said-C said
John$_j$ said in Seoul that Bill said {here / in Seoul} that Mary likes him$_j$.
(lit. John$_j$ said in Seoul that Bill said here that Mary likes me$_j$.) (Park 2016, (53))

Since the indexical shift operator does not enter into any syntactic relationship with the shifty indexical – in contrast with the syntactic binding relationship between OP^{log} and an indexiphor – we do not expect to see any locality condition on indexical shift.[22]

A further outcome of the recognition of indexiphors in Amharic is an explanation for a contrast between this language and Uyghur concerning the structural conditions on "shifty" readings. In Amharic (6) (repeated below), the De Re Blocking effect forces it to be only the higher of two elements controlling first person agreement that receives a "shifty" reading – in fact an indexiphoric reading.

(29) John [*pro$_{subj}$ pro$_{obj}$* al-ittazzoza-NN] ala.
John [NEG.1s-obey.mkimperf-1sO] say.PERF.3sm

a. ✓ John$_i$ says he$_i$ will not obey me.
b. ✗ John$_i$ says I will not obey him$_i$.

Uyghur seems to show the opposite pattern: higher material is *less* likely to receive a shifty reading than is lower material. Uyghur allows embedded subjects to be realized either in the nominative or the accusative case. Shklovsky & Sudo (2014) demonstrate that both types of subjects are base-generated inside the attitude complement and may be interpreted there (they may receive *de dicto* opaque readings). However, accusative subjects occupy a higher position inside the attitude complement than nominative subjects do. Accusative (high) subject indexicals disallow shift, (30a), whereas nominative (low) subject indexicals require it, (30b).

(30) a. Ahmet [**meni** ket-ti] di-di. *Uyghur*
Ahmet [1SG.ACC leave-PAST.3] say-PAST.3
Amhet$_i$ said that I/*he$_i$ left.

b. Ahmet [**men** ket-tim] di-di.
Ahmet [1SG.NOM leave-PAST.1SG] say-PAST.3
Amhet$_i$ said that he$_i$/*I left.

(Shklovsky & Sudo 2014, 386)

[22] That is, if predicates V_1 and V_2 both optionally allow indexical shift in their complement, an indexical *i* in the structure $[\ldots V_1\ [_{CP_1}\ldots V_2\ [_{CP_2}\ldots i\ldots]]]$ may draw on the matrix context, a context modified by an operator at CP_1, or a context modified by an operator at CP_2. Of course, in a language where indexical shift is obligatory in the complement of V_2, no such freedom will be attested. A proper test for locality therefore requires establishing, as a precondition, that V_2 does not require shift. This is the case for Amharic, Nez Perce, and Korean; it may not be the case in Navajo, given the facts presented by Schauber (1979).

Likewise, any indexical to the left of (i.e. higher than) an accusative subject cannot shift, but any indexical to the right of (i.e. lower than) a nominative subject must shift. This is shown for second person dative object *sanga* in (31).

(31) a. Ahmet Aygül-ge [*sanga* **meni** xet ewet-ti] di-di. *Uyghur*
Ahmet Aygül-DAT [2SG.DAT 1SG.ACC letter send-PAST.3] say-PAST.3
Ahmet told Aygül$_i$ that I sent a letter to you/*her$_i$. (Shklovsky & Sudo 2014, 396)

b. Ahmet manga [**men** *sanga* xet ewet-tim] di-di.
Ahmet 1SG.DAT [1SG.NOM 2SG.DAT letter send-PAST.1SG] say-PAST.3
Ahmet$_i$ told me that he$_i$ sent a letter to me/*you. (Shklovsky & Sudo 2014, 395)

These contrasts follow on a view of Uyghur as containing only shifted indexicals, rather than indexiphors. An indexiphor requires binding by OP^{log} and thus must find itself within the c-command domain of this operator at LF. An indexical, by contrast, is free to occur above or below a shifty operator like OP$_{\text{PERS}}$. What the Uyghur data show (as Sudo 2012 and Shklovsky & Sudo 2014 argue at length) is that Uyghur indexicals may occur either above or below an indexical shifting operator. Those that are higher than the operator receive unshifted readings; those that are lower than the operator receive shifted readings. While constraints on "shifty" mixed readings in Amharic reflect the position of an indexiphor with respect to a *de re* binder, constraints on shifty readings in Uyghur reflect the position of an indexical with respect to a shifty operator.

3. Indexiphors beyond Amharic

We now turn to evidence for indexiphoricity outside of Amharic, beginning with a series of cases noted in the typological literature (Evans 2006, Aikhenvald 2008, and Nikitina 2012b) before turning to a case recently discussed as posing an apparent counterexample to Anand & Nevins's (2004) Shift Together constraint (Podobryaev 2014).

3.1 De Re Blocking in Papua New Guinea

A first set of evidence comes from what Evans (2006) dubs the "double first person construction", found in a series of languages of New Guinea (several of them from the Highlands region) including Dani (Bromley 1981), Dom (Tida 2006, cited in Aikhenvald 2008), Gahuku (Deibler 1976), Golin (Loughnane 2005), and Usan (Reesink 1993). In the double first person construction, "person deixis is calculated absolutely for the object slot and relatively for the subject slot" (Evans 2006, 101).[23] This, of course, is precisely as in Amharic (6), repeated in (34).

[23]Evans discusses this claim for Dani, Dom, Golin, and Usan; Gahuku is added by Nikitina (2012a). Note however that Diebler's description of Gahuku does not clearly lay out the subject-object asymmetry described by some other Papuanists, e.g. Bromley (quoted below). Note also that Loughnane (2005, 147) reports a potential counterexample to the subject/object asymmetry shown in (32). However, in this example, the unshifted 1st person subject controls third-person agreement in the downstairs clause, rather than 1st

(32) Golin (Loughnane 2005, 146)

yal kane [pro_{subj} ininna$_{obj}$ si-ra-bin-w-a] di-n-g-w-e
man many [XPHOR 1PL hit-IRR-1PL.SUBJ-REP-DISTAL] say-3-ASSERT-3-PROX
They$_i$ say they$_i$ will hit us.
lit. They$_i$ say we$_i$ will hit us$_j$.

(33) Gahuku (Deibler 1976, 115)

leliq nemoqz [mota pro_{subj} pro_{obj} li-m-it-ove] l-oka-ke
ours it.is.but [now XPHOR 1SG 1PL.OBJ-give-FUT-1SG.SUBJ] say-3SG-SS
It is ours, but after he said that he would give it to us now.
lit. He$_i$ said I$_i$ would give it to us$_j$ now.

(34) Amharic (repeated from (6))

John [pro_{subj} pro_{obj} al-ittazzoza-NN] ala.
John [XPHOR 1SG NEG.1S-obey.MKIMPERF-1SO] say.PERF.3SM

a. ✓ John$_i$ says he$_i$ will not obey me.
b. ✗ John$_i$ says I will not obey him$_i$.

This pattern is derived straightforwardly if the relevant Papuan languages contain indexiphors, just as Amharic does. Just like in Amharic, in the examples above it cannot be that both subject and object alike are indexiphors (or ordinary indexicals); that would violate Principle B. It is also not possible for the subject to be an ordinary 1st person indexical while the object is an indexiphor; that would violate De Re Blocking. What is left is the parse where the subject is "shifty" (an indexiphor) but the object is not (an ordinary 1st person pronoun).

In indication of the generality of this pattern, Bromley (1981, 244) notes in his description of "clauses of intention" in Lower Grand Valley Dani that

> In these same forms [which feature "shifty" subjects –ARD], the person reference of any personal object-marking prefixes is interpreted from the standpoint of the speaker in all cases, so that in this construction, and only here, there occur verb forms which have first person object markers, referring to the speaker or the speaker with others, and also first person subject markers, where these refer to the addressee or any other non-speaker, since the marked subject person category is not interpreted from the standpoint of the speaker but of the subject of the superordinate verb.

Reesink (1993), citing Bromley's description, adds that the patterns in Usan are remarkably similar. Such reports clearly pose a challenge for the extension of a theory like Schlenker's (1999 et seq.) to the Papuan data. Just as for Amharic (34), the subject-object asymmetry characteristic of De Re Blocking is not predicted by a theory wherein (a) embedded 1st person agreement always indicates the presence of a 1st person indexical, and (b) indexicals can freely draw upon the utterance context or on a quantification over contexts.

person agreement as in (32). This could be evidence that this pronoun has in fact moved out of the lower clause, parallel to the Uyghur examples discussed by Shklovsky & Sudo (2014, 399).

3.2 De Re Blocking and Locality in Mishar Tatar

A second set of evidence for indexiphoricity beyond Amharic comes from Mishar Tatar, a Turkic language. Like in Amharic, null pronouns controlling 1st person agreement in Mishar Tatar may have either "shifty" or non-shifty readings, (35); overt pronouns, however, lack shifty readings, (36).

(35) Alsu [*pro* kaja kit-te-m diep] at'-tɤ?
Alsu [where go.out-PST-1SG C] say-PAST
a. Which place did Alsu$_i$ say I went?
b. Which place did Alsu$_i$ say she$_i$ went?
(Podobryaev 2014, 84)

(36) Alsu [min kaja kit-te-m diep] at'-tɤ?
Alsu [1SG where go.out-PST-1SG C] say-PAST
Which place did Alsu$_i$ say {I/*she$_i$} went? (Podobryaev 2014, 84)

This distinction suggests that overt pronouns in Mishar Tatar are always indexical, never indexiphoric; null pronouns, by contrast, may be either indexicals or indexiphors, just like their Amharic counterparts.[24] Initial evidence that indexiphoricity, rather than indexical shift, is indeed the source of the "shifty" reading of (35) comes from the fact that both "shifty" *pro* and a non-shifty overt 1st person pronoun may co-occur in the same clause, (37). In terms of relative position, we find the now-familiar configuration where the "shifty" pronoun occupies subject position.

(37) Alsu [*pro* ber kajčan da miŋa bag-m-a-s-mɤn diep] bel-ä.
Alsu [XPHOR never.NPI 1SG.DAT look.at-NEG-ST-POT-1SG C] know-IMPERF
Alsu$_i$ knows that she$_i$ would never look at me. (Podobryaev 2014, 86)

Given this configuration, (37) does not run afoul of De Re Blocking, as the indexiphor remains de re free in the domain of its OP. And, of course, like its Papuan counterparts, it does not run afoul of Shift Together, as no indexical shift has taken place.

A second type of evidence that indexiphoricity is involved in "shift" in Mishar Tatar comes from De Re Blocking. In what follows, I will highlight this similarity by presenting the Mishar Tatar examples and corresponding Amharic examples together for each case. In both examples below, the *pro* possessor allows both a "shifty" (indexiphoric) reading and an unshifty (indexical) reading.[25]

[24]This proposal is closely related to Gültekin Şener & Şener's (2011) proposal for Turkish (a related language). Turkish (at least as documented by Gültekin Şener & Şener 2011) is like Mishar Tatar is showing apparent shifting only for null pronouns, not for overt ones. Given that indexiphoric pronouns are bound by an indexiphoric operator, these facts connect with a larger body of work showing that null pronouns are more susceptible to binding than are their overt counterparts (Montalbetti 1984, Messick 2016, Patel-Grosz To appear). See Akkuş (2018) for discussion of variation in Turkish (some of which, I strongly suspect, reflects the degree to which speakers posit indexiphoric rather than indexical parses).

[25]Here I set aside the additional readings of Amharic (38) that are possible if the *pro* object is itself indexiphoric. In Mishar Tatar, object pronouns must be overt; recall that overt pronouns in this language cannot be indexiphoric.

(38) Amharic

John [[*pro* lij-e] pro_{obj} ay-ittazzoza-ññ] ala.
John [[1SG/XPHOR son-1SG] 1SG NEG.3S-obey-1SG] say.PERF.3SM

a. John$_i$ says my son will not obey me.

b. John$_i$ says his$_i$ son will not obey me.

(39) Mishar Tatar (Podobryaev 2014, 87)

Alsu [[*pro* sestra-m] mine kür-de diep] at'-tɤ.
Alsu [[1SG/XPHOR sister-1SG] 1SG.ACC see-PAST C] say-PAST

a. Alsu$_i$ said my sister saw me.

b. Alsu$_i$ said her$_i$ sister saw me.

The possibility of an indexiphoric parse for *pro* is lost in both languages when the would-be indexiphor is c-commanded by an unshifted first person indexical. The relevant example is in Amharic is again (6), repeated in (40). Mishar Tatar does not allow object *pro* (and does not allow overt pronouns to be indexiphoric); therefore, this pattern is demonstrated in (41) with the help of a *pro* object possessor.

(40) Amharic

John [pro_{subj} pro_{obj} al-ittazzoza-NN] ala.
John [NEG.1s-obey.mkimperf-1sO] say.PERF.3sm

a. ✓ John$_i$ says he$_i$ will not obey me.
(John says [OP^{log}_i XPHOR$_i$ will not obey 1SG])

b. ✗ John$_i$ says I will not obey him$_i$.
(John says [OP^{log}_i 1SG will not obey XPHOR$_i$])

(41) Mishar Tatar (Podobryaev 2014, 105)

Marat [pro_{subj} [pro_{poss} sestra-m-nɤ] sü-ä-m diep] at'-tɤ
Marat [[sister-1sg-acc] love-st.impfv-1sg C] say-pst

a. ✓ Marat$_i$ said that I love my sister.
(Marat said [1SG love 1SG's sister].)

b. ✓ Marat$_i$ said that he$_i$ loves his$_i$ sister.
(Marat said [OP^{log}_i XPHOR$_i$ love XPHOR$_i$'s sister].)

c. ✓ Marat$_i$ said that he$_i$ loves my sister.
(Marat said [OP^{log}_i XPHOR$_i$ love 1SG's sister].)

d. ✗ Marat$_i$ said that I love his$_i$ sister.
(Marat said [OP^{log}_i 1SG love XPHOR$_i$'s sister].)

Given that (41) involves an object possessor, rather than the object itelf, it is possible for both *pro* elements to be indexical 1st persons, or for both to be indexiphoric, without violation of Condition B. This accounts for readings (a) and (b) of (41). Of crucial interest for comparison with Amharic (40) is the "mixed" readings. In (41c), like in Amharic (40a), the

indexiphor c-commands the 1st person indexical and the parse is well-formed. By contrast, in (41d), like in Amharic (40b), the 1st person indexical c-commands the indexiphor. This is a violation of De Re Blocking and is ruled out.[26]

This tight similarity to the Amharic facts continues in a third type of evidence for indexiphoricity in Mishar Tatar – locality effects. We saw in (21) above that the OP^{log} binder of Amharic indexiphors cannot be separated from its bindee by a clause boundary. The same effect in Mishar Tatar is seen in (42) in the unavailability of parse (a). No De Re Blocking violation is incurred here; yet the parse involving long-distance binding of indexiphoric *pro* is ruled out. Note that a short-binding parse (42b) is also ruled out in this example, due to number feature clash between the (plural) intermediate subject and the (singular) indexiphor in the innermost clause. (I assume that OP^{log} inherits a number feature from its local superordinate subject.) Finally, ruled out as well is a reading where no indexiphors are present, given Principle B.

(42) # Alsu [$_{CP}$ *pro* [$_{CP}$ *pro* mine sü-ä-m diep] at'-ɤ-r-lar
Alsu [3PL [1SG.ACC love-IMPERF-1SG C] tell-ST-POT-PL
diep] kurk-a.
C] be.afraid-IMPERF

a. ✗ Alsu$_a$ is afraid that they will tell that she$_a$ loves me.
(Alsu is afraid that [$OP^{log}{}_i$ they will tell [XPHOR$_i$ loves 1SG]])
– violation of Locality

b. ✗ Alsu$_a$ is afraid that they$_t$ will tell that they$_t$ love me.
(Alsu is afraid that [they will tell [$OP^{log}{}_i$ XPHOR$_i$ loves 1SG]])
– Agreement violation between OP^{log} and plural intermediate subject

c. ✗ Alsu$_a$ is afraid that they$_t$ will tell that I love me.
(Alsu is afraid that [they will tell [1SG loves 1SG]])
– Principle B violation

(Podobryaev 2014, 108)

The absence of any well-formed parse explains the overall # diacritic provided by Podobryaev.

Overall, the indexiphoric theory of "shifty" *pro* in Mishar Tatar is able to explain why overt and null pronouns behave distinctly in this language – only the latter may be indexiphors – as well as why the "shifty" interpretation of null pronouns is restricted in the ways we see in (41) and (42). Both restrictions are exactly parallel to corresponding restrictions in Amharic. Podobryaev (2014), analyzing the null subject of clauses like (37) as a true

[26] Podobryaev's own analysis of "mixed" readings is quite different. He posits that reading (41c) involves (string-vacuous) scrambling of the embedded object to the periphery of the embedded clause, which obviates what he takes to be an indexical shift effect. To rule out the alternative mixed reading in (41d), he posits that *pro* must be a nominative subject and that nominative subjects cannot undergo scrambling. It is not clear, however, how the nominative case of *pro* can be diagnosed in this structure. (While Mishar Tatar does not allow ordinary objects to be *pro*, this may be because it requires *pro* to contain a nominative case feature. Such a feature is potentially maintained upon further raising into an accusative case position.) Note in addition that this analysis requires rather different approaches to "shift" and its absence in (39) vs. (41) – and of course does not respond to the similarities between Mishar Tatar and Amharic.

first person (shifted) indexical, uses facts of this type to argue that Mishar Tatar does not obey Shift Together, and therefore that indexicals in that language cannot be given a standard Kaplanian treatment. The availability of an indexiphoric parse avoids this conclusion. Indexicals in Mishar Tatar can be treated in a Kaplanian framework, just like indexicals in English and other languages. Furthermore, Mishar Tatar does not have indexical shift. What it has is bound *pro* controlling 1st person agreement – an indexiphor.[27]

4. Agreement reprogramming under indexiphoric operators

In examples like Amharic (5), Gahuku (33), and Mishar Tatar (41), one and the same embedded clause contains two distinct sources of 1st person agreement – an indexiphor and an ordinary 1st person indexical. To account for the morphology, we might say for these cases that a certain morphosyntactic feature (call it [1]) is carried by two different types of *pro*, capturing the shared paradigm of agreement. A consequence is that feature [1] must not be semantically interpreted as a Kaplanian speaker indexical. Rather, there must be a formal feature [1] that both indexiphors and 1st person indexicals carry (which is relevant for morphology), and the interpreted speaker feature entails this feature [1] (but not vice versa).[28]

In this section we turn to an additional complexity of agreement in the context of indexiphoric operators in certain languages – cases where it will not be sufficient to say that indexiphoric pronouns share a formal feature in common with 1st person indexicals. Rather, the operators that bind indexiphors are responsible for triggering a revised agreement paradigm for the embedded clause. This "reprogramming" of agreement changes the way that ordinary 1st person pronouns agree in indexiphoric contexts.

An initial example comes from Donno Sɔ (Culy 1994). This language contains what Curnow (2002) calls a 'first person logophor' (in our terms, an indexiphor), *inyemɛ*, which is morphologically distinct from ordinary 1st person pronoun *mi*, yet triggers first person agreement in its clause:

(43) Wo [OP$^{log}_{i}$ inyemɛ$_i$ yogo bojɛm] gi. *Donno Sɔ*
3SG [XPHOR tomorrow go.PROG.1SG] said.3SG
He$_i$ said that he$_i$ will leave tomorrow. (Culy 1994, 114)

(44) (Mi) bojɛm
(1sg) go.PROG.1SG
I'm going. (Culy 1994, 122)

The pattern in (43) is distinct from the indexiphoric examples in sections 2 and 3 only in that the indexiphor is phonologically distinct from its first person counterpart. (Thus Donno

[27] Podobryaev (2014, 91) provides two arguments against an indexiphoric parse. First, "shifty" *pro* is available in Mishar Tatar only in finite clauses, and not inside of accusative embedded subjects (which are very high in the embedded clause). This, however, is expected if *pro*, as an indexiphor, must be bound by OP^{log}. OP^{log} may be restricted to finite clauses, and material that is interpreted outside its c-command domain cannot be bound by it. Second, certain sentences with multiple instances of "shifty" *pro* are subject to something like a Shift Together effect. I provide an analysis of this pattern on the indexiphoric analysis in the next section.

[28] Alternatively, as proposed by Messick (2016), it could be that indexiphors and 1st person indexicals both carry the same morphosyntactic features, but that these features are deleted on indexiphors prior to LF.

Sɔ provides a way around the ambiguity of, for instance, Amharic *pro*.) The twist comes when we consider first person pronouns embedded in clauses that license indexiphors. Here, these pronouns cannot trigger their typical agreement form (e.g. *bolum*, 'left.1sg'). Rather, a first person subject occurs with an uninflected form of the verb, (45a) – here *boli* instead of *bolum*. As Culy writes, "first person inflection acts as logophoric inflection when it occurs in indirect discourse" (1994, p. 123).

(45) a. Oumar [OP^{log}_i ma jɛmbɔ paza boli] miñ tagi. *Donno Sɔ*
Oumar [1SG sack.DEF drop left] 1SG.OBJ informed
Oumar informed me that I had left without the sack.

b. Oumar [OP^{log}_i inyemɛ$_i$ jɛmbɔ paza bolum] miñ tagi.
Oumar [XPHOR sack.DEF drop left.1SG] 1SG.OBJ informed
Oumar$_i$ informed me that he$_i$ had left without the sack.
(Culy 1994, p. 123)

This pattern in Donno Sɔ varies by verb, such that verbs that allow indexiphors in their complement show pattern (45), whereas verbs outside this class allow embedded first person subjects to control first person agreement (Culy 1994, pp. 123-124). This pattern suggests that OP^{log} in Donno Sɔ has the special property of licensing *-Vm* 'AGR.1SG' with non-author reference in its clause (provided agreement is controlled by an indexiphor) while also antilicensing it with author reference. The verbs *tagi* 'inform' and *gi* 'say' require OP^{log} in their complements. Therefore, 1st person indexicals embedded under these verbs cannot control ordinary 1st person agreement, as we see in (45a). A consequence is that *tagi* and *gi* clauses with null embedded subjects are unambiguous: those with third person matrix subjects and ostensibly first person embedded agreement can only have indexiphoric embedded subjects.[29] (In isolation from the facts in (43)-(45), of course, sentence (46) gives the impression of containing a shifty indexical (viz. first person singular *pro*).)

(46) Oumar [$_{CP}$ *pro* [$_{DP}$ minnɛ inyemɛ mɔ̃] gɛndɛzɛm] gi. *Donno Sɔ*
Oumar [XPHOR [field XPHOR POSS] regard.PROG.1SG] said
Oumar$_i$ said that {he$_i$/*I} will look at his$_i$ field. (Culy 1994, 123)

In a language (or context) where OP^{log} is optional, rather than obligatory, we expect this reprogramming effect to reveal itself in the form of optionality in embedded 1st person agreement. This is what we find in Mishar Tatar. The optionality of agreement for the embedded 1st person pronoun in (47) contrasts sharply with matrix contexts, where agreement is obligatory (Podobryaev 2014, 106).[30]

(47) Roza [min kit-te(-m) dip] bel-ä. *Mishar Tatar*
Roza [1SG go.out-PST(-1SG) C] know-IMPERF
Roza knows that I left. (Podobryaev 2014, 106)

[29] In this particular example, the possibility of a 1st person parse for the *pro* subject is additionally (redundantly) ruled out by De Re Blocking. The expectation is, therefore, that the corresponding example without embedded first person agreement will be ill-formed.

[30] Podobryaev (2014, 108) further shows that this type of 'disagreement' is barred in cases where the matrix subject is first person; this is in keeping with the general fact that logophors require 3rd person antecedents (or at least resist 1st person ones). In more formal terms: OP^{log} requires feature transfer from a third person attitude holder. For a parallel effect in Donno Sɔ, see Culy (1994, (21c)).

Now, appeal to agreement reprogramming in Mishar Tatar raises questions about the analysis of examples like (41), repeated below. We still expect 1st person agreement in (48a), where OP^{log} is absent, and (48b), where reprogramming results in 1st person agreement for two distinct indexiphors. Double first person agreement in (48c) poses a challenge for the idea that all agreement is reprogrammed on a clause-wide basis in the context of Mishar Tatar OP^{log}. On this parse, we would expect 1st person agreement with the indexiphor only.

(48) Mishar Tatar (Podobryaev 2014, 105)

Marat [*pro*$_{subj}$ [*pro*$_{poss}$ sestra-m-nɤ] sü-ä-m diep] at'-tɤ
Marat [[sister-1sg-acc] love-st.impfv-1sg C] say-pst

a. ✓ Marat$_i$ said that I love my sister.
(Marat said [1SG love 1SG's sister].)

b. ✓ Marat$_i$ said that he$_i$ loves his$_i$ sister.
(Marat said [$OP^{log}{}_i$ XPHOR$_i$ love XPHOR$_i$'s sister].)

c. ✓ Marat$_i$ said that he$_i$ loves my sister.
(Marat said [$OP^{log}{}_i$ XPHOR$_i$ love 1SG's sister].)

d. ✗ Marat$_i$ said that I love his$_i$ sister.
(Marat said [$OP^{log}{}_i$ 1SG love XPHOR$_i$'s sister].)
(Out by De Re Blocking)

The well-formedness of (48c) might be taken to suggest that reprogramming is itself subject to some (constrained) variation: it can apply either to subject agreement only or to both subject agreement and possessor agreement. Some support for this idea comes from the limited interpretations of (49), which contains two instances of possessor agreement. In this case, mixed readings are ruled out; either both instances of *pro* are indexical, or both are indexiphoric.

(49) Mishar Tatar (Podobryaev 2014, 105)

Marat [[*pro* sestra-m] [*pro* brat-ɤm-nɤ] sü-ä diep] kurk-a.
Marat [[sister-1SG] [brother-1SG-ACC] love-IMPERF C] be.afraid-IMPERF

a. Marat is afraid that my sister loves my brother.
(Marat is afraid that [1SG's sister loves 1SG's brother].)

b. Marat is afraid that his$_i$ sister loves his$_i$ brother.
(Marat is afraid that [$OP^{log}{}_i$ XPHOR$_i$'s sister loves XPHOR$_i$'s brother].)

c. ✗ Marat is afraid that my sister loves his$_i$ brother.
(Marat is afraid that [$OP^{log}{}_i$ 1SG's sister loves XPHOR$_i$'s brother].)

d. ✗ Marat is afraid that his$_i$ sister loves my brother.
(Marat is afraid that [$OP^{log}{}_i$ XPHOR$_i$'s sister loves 1SG's brother].)

Given the absence of c-command between these instances of *pro*, no De Re Blocking is involved here. Reprogramming of possessive agreement offers an alternative account for why an indexical *pro* possessor and a indexiphoric *pro* possessor cannot coexist in this structure. Given that parses (49c,d) involve an indexiphoric possessor, OP^{log} must be present.

Furthermore, agreement reprogramming must apply to possessives (not just subject agreement): this causes indexiphors to control 1st person agreement, and also causes 1st person indexicals *not* to control this agreement. Given this, the parses in (49c,d) will not generate string (49) (but rather versions of this string that lack agreement with the true first person indexicals). The ungrammaticality of these parses is essentially due to an agreement error.

The upshot for Mishar Tatar is that cases of double "first person" where one instance reflects an indexical and the other a clausemate indexiphor may occur only when the indexical does not trigger agreement (e.g. (37)) or triggers a different paradigm of agreement than the indexiphor (e.g. subject agreement vs. possessive agreement). Agreement reprogramming under indexiphoric operators thus ends up giving rise to a look-alike Shift Together effect in (49) – this even on an analysis in which Mishar Tatar contains only indexiphors, never shifty indexicals.

5. Concluding remarks

What does the apparent shiftiness of Navajo 1st person agreement in an example like (1) tell us about indexical shift in Navajo? What, in general, should we conclude when we find cases of "shifty agreement" which cannot be ascribed to quotation? The overall conclusion of this paper is that two hypotheses must be considered for cases like these: a true indexical shift analysis and an analysis featuring a bound, indexiphoric pronoun.

In cases like (1), this is certainly a subtle difference – a distinction between two forms of silence. Indexicals and indexiphors both are frequently silent; both trigger 1st person agreement (modulo reprogramming); both are subject to interpretation *de se*. A proposed distinction, then, must be justified by a significant gain in understanding. What I have argued in this paper is that the cost is justified indeed. The distinction comes into relief in Amharic (as discussed by Anand 2006), as well as in Papuan languages and Mishar Tatar, upon consideration of clauses with more than one trigger of 1st person agreement. With indexicals, these clauses are characterized by the Shift Together effect. (Alternatively, as in Uyghur, these clauses involve exceptions to this effect only insofar as indexicals may move outside the scope of a shifty operator. In this case higher material is less likely to shift and lower material is more likely to shift.) With indexiphors, by contrast, these clauses are characterized by De Re Blocking, which prohibits indexiphors from positions which are c-commanded by ordinary 1st person indexicals. This gives the impression that higher positions are more likely than lower positions to support "shift" (though in fact no indexical shift is actually involved). Additional clues come from long-distance shifting, available only to indexicals and not to indexiphors, and agreement reprogramming, triggered only by indexiphoric operators and not by indexical shifting ones.

These contrasts both across languages and within them flesh out a constrained typology of "shifty agreement" and related phenomena. Shifty agreement is not an area where anything goes. It is not possible, for instance, for a 1st person subject to remain unshifted while its 1st person clausemate object "shifts" (assuming both remain in situ inside their clause). This follows from De Re Blocking condition on indexiphors and the Shift Together constraint on indexicals. It is not possible for a 1st person subject to "shift" to a non-local attitude holder when that subject's clausemate 1st person pronoun remains unshifted. This

follows from the locality condition on indexiphors (and, again, the Shift Together constraint on indexicals). And it is not possible for a language that disallows all Shift Together violations to reassign control of ordinary 1st person agreement to some other type of controller in attitude reports. This follows from the claim that reprogramming is associated with OP^{log} only. In these respects and the various others discussed throughout this paper, any potential unified theory of shifty agreement is called on to provide an alternative account for the variation we see as well as its constraints. The constraints in particular pose a challenge for existing theories of indexical shift which are more permissive than the proposal adopted here (e.g. Schlenker 1999 et seq., von Stechow 2003, Podobryaev 2014).

As a final empirical note, while this paper has focused on indexiphoric pronouns that must be bound by an attitude holder or reported speaker (as in the canonical cases of logophoricity discussed since Hagège 1974), it has also been observed that some languages dispose of a special set of pronouns that must be bound by the *addressee* of a speech verb. As Nikitina (2012b) observes, such 'addressee logophors' are found both in languages with distinguished 'speaker' logophors (i.e. logophors of the classic type; this is the case in Goemai, Hellwig 2006) and in languages without them (e.g. Pero; Frajzyngier 1989, 1996). The existence of such elements of course raises the prospect that certain instances of apparent shifty second person indexicals may also be better analyzed as addressee-indexiphoric.

Further research is certainly required to assess this hypothesis, but for now I will simply note that it makes it possible to explain the behavior of apparently shifty second person in Mishar Tatar (Podobryaev 2014), which mirrors the behaviors of apparent first persons discussed above, as well as a set of facts on logophors and apparently shifty second persons in certain languages of Central and West Africa (Aikhenvald 2008, Nikitina 2012a, 2012b). This latter class can be exemplified by Wan, a language where reported speech featuring a classic logophor may also feature what are apparently optionally shifted second person indexicals, but may not feature first person indexical shift (Nikitina 2012a).[31] A possible analysis of this situation involves homophony between addressee indexiphors and true second person pronouns, together with a ban on clausemate status for shifty person indexicals and logophors/indexiphors of any type (cp. Korean; Park 2016). On this analysis, clauses containing logophors in Wan would allow no shifty person indexicals at all (and the Wan facts pose no challenge to my claim in Deal (2017) that second person indexical shift requires first person indexical shift). The crucial predictions of this approach – *de re* blocking and locality effects – remain to be tested.

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[31] Wan allows shifted first person indexicals only in clauses without logophors, and only under speech predicates.

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Amy Rose Deal
ardeal@berkeley.edu