New Puzzles for Shifting Indexicals:
An Amharic Case Study

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1. Introduction

The empirical focus of this paper is the shifting indexical pronoun in Amharic (Ethiosemitic). Previous analyses of shifting indexicals focus on two popular accounts that are representative of two strategies for the semantics of shifting indexicals ((i) Anand and Nevins, 2004, Anand 2006, (ii) Schlenker 1999, 2003). The goal of this paper is to use novel Amharic data to move the discussion of these approaches forward. We will distinguish between the two theories of this type of pronoun by considering new facts about antecedence, and we will show how both theories require revisions in order to accommodate novel data from plural shifting indexicals in Amharic.

2. Background

Indexicals are expressions of natural language that depend on the context of utterance for their semantic values. This includes expressions that pick out the speaker(s) of the context (*I/me/we*), the addressee(s) (*you*), the place (*here*), the time (*now*), etc. (1) contains four indexicals.

(1)   Now, we are talking to you here.

Shifting indexicals are indexicals whose reference can shift from the original utterance context. For example, certain languages allow the pronoun "I" to refer to the speaker of the reported speech act. English does not have shifting indexicals, as demonstrated in (2):

(2)   John said that I am here.

In (2), the indexical "I" can only refer to the speaker of (2), and not the speaker of the reported speech act, John. In contrast, consider the Amharic sentence (3) below:

(3)   John   [dʒägna   nä-ññ]   yɨ-l-all
         John   hero   COP-1SG.S   3SGM.S-say-AUX.3SGM.S
         'John says {I am, he is} a hero'[1]

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[1] Gloss abbreviations: 1 – first person, 3 – third person, AUX – auxiliary, COP – copula, DEF – definite marker, IMPF – imperfective verb, M – masculine, NEG – negation, .O – object agreement, PF – perfective verb, PL – plural, .S – subject agreement, SG – singular.

In (3), "I" can refer to either the speaker of (3) or the main clause subject, and thus demonstrates the presence of the shifted indexical. Furthermore, we know that (3) is not a quotative context, as evidenced by the *wh*-dependency in the following:

(4)   John   [dʒägna   lämɨn   nä-ññ]   yɨ-l-all?
       John   hero   why   COP-1SG.S   3SGM.S-say-AUX.3SGM.S
       'Why does John say that {I am, he is} a hero?' (Anand 2006:82)

The question in (4) could not have been derived from (3) if the reported speech act were in a quotative context because *wh*-words cannot be extracted from quotative contexts.

Two main theories have been proposed to account for these facts. We lay out the basic features of each approach and their predictions in the next section.

3. Predictions of the two theories
3.1. Anand and Nevins (2004) and Anand (2006)

The first theory incorporates the use of a context shifting operator (Anand and Nevins (2004); Anand (2006)). In this approach, shifting comes about because of this special operator. Syntactically, this operator functions like a complementizer.

A standard view about indexicals is that their semantic interpretation is dependent on an utterance context *c*, represented as a parameter on the interpretation function: $[[ ]]^c$. Each context *c* is a list that encodes who the speaker, place, time, etc. of the utterance is. A context-changing operator modifies such lists, so that the scope of the operator is evaluated with respect to the modified context. For example, if an Amharic sentence like (3) spoken by X has a context-changing operator, then the embedded clause will be evaluated with respect to a new context which has Y as the speaker value, and not X. Anand (2006) defines several context-changing operators for different languages. His definition for the Amharic Op*per*, which only modifies the speaker and the addressee values of the context, is reproduced here:

(5)   Amharic Op*per* : $[[Op_{per}\ \alpha]]^{c,i} = [[\alpha]]^{j,i}$, where $j = ($SPEAKER(i), ADDRESSEE(i), TIME(c), WORLD$(c))$

The operator proposed by Anand does not function without constraints. A key component of Anand's operator is the No Intervening Binder Constraint, which is reproduced below:

(6)   No Intervening Binder Constraint
       A shiftable indexical ind1 cannot pick up reference from a context c_a if there is another intervening context c_b which another indexical ind2 picks up reference from.

This constraint allows for binding configurations like (7), but rules out configurations like (8):

(7) $c_a\,[\ldots$attitude-verb $c_b\ldots[$ind-1$c_a\ldots$attitude-verb $c_c\ldots[$ind-2$c_a]]]$

(8) $*c_a\,[\ldots$attitude-verb $c_b\ldots[$ind-1$c_b\ldots$attitude-verb $c_c[$ind-2$c_a]]]$

Thus Anand's account predicts that the referential possibilities for shifting indexicals are constrained by the principle of No Intervening Binder. This crucially differs from Schlenker's theory, as discussed in the next section.

3.2. Schlenker (1999,2003)

For Schlenker, a special type of pronoun is responsible for the shifting behavior of Amharic indexicals, instead of a special type of complementizer as in the Anand and Nevins' type approach.

According to Schlenker, Amharic indexicals contain a free variable that can be bound by any of the λc operators in the sentence. Each clause is associated with its own λc. For example:

(9) λc_1 John said λc_2 that Bill said λc_3 that I_c will win

For Schlenker, there are three possibilities for a shiftable $[[I_c]]$ in (9):

i. $[[I_c]] = \text{author}(c_1) = \text{speaker of (8)}$
ii. $[[I_c]] = \text{author}(c_2) = \text{John}$
iii. $[[I_c]] = \text{author}(c_3) = \text{Bill}$

Thus, in opposition to Anand and Nevins, Schlenker's theory allows for intervening binders, as nothing restricts which λc binds the free variable in $[[I_c]]$.

4. Introducing new data
4.1. Testing the No Intervening Binder Constraint

In order to distinguish the two prevailing theories, we began by collecting novel data that tests the No Intervening Binder constraint. Our first sentence, reproduced below, is from Wolf Leslau's Amharic reference grammar (1995). This sentence and its interpretation was accepted by our informant:
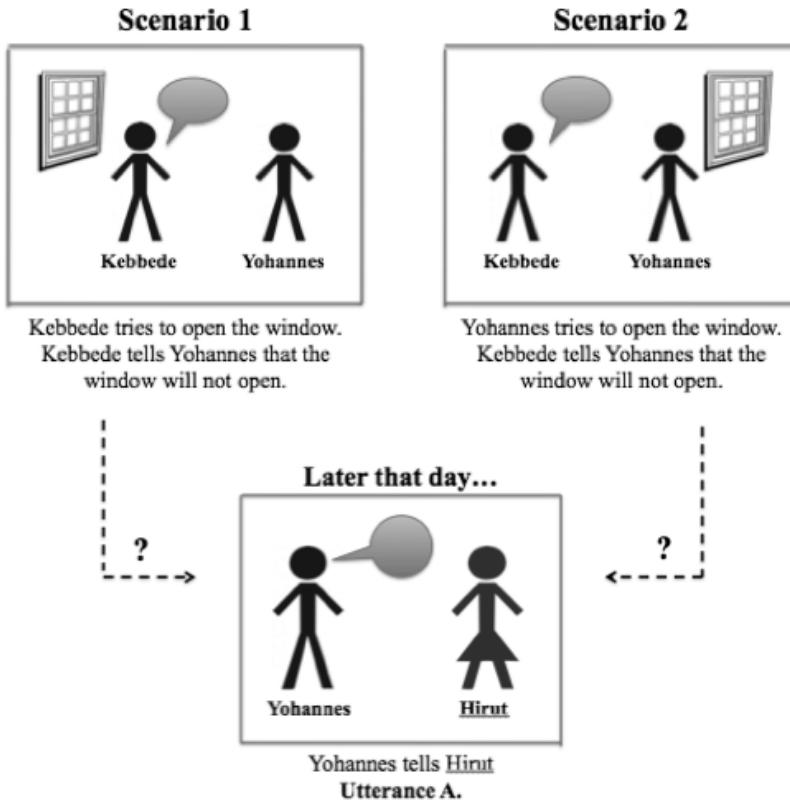
(10)   mäskot-u   al-ikkäfät-illiññ   al-ä
        window-DEF NEG-open.IMPF.1SG.S-1SG.O   say.PF-3MSG.S
        the window$_i$ said I$_i$ will not be opened for me$_{AUTH(c)}$
        'The window wouldn't open for me'

Note that there are two first person indexicals in the lower clause, although they do not share a referent. Instead, the first person subject corefers with the subject of the matrix clause (the window), while the first person object refers to the speaker of the utterance. This is an apparent violation of No Intervening Binder since the most embedded clause contains an indexical whose reference is determined by the matrix context, even though there is an intervening shifted indexical taking its value from a different clause.

While (10) speaks against Anand and Nevins' theory, Schlenker's theory would predict these facts. To investigate a bit further, we constructed a scenario in which (10) is the most embedded clause in a sentence with multiple embeddings.

(11)   Utterance A:
        Käbbädä mäskot-u   al-ikkäfät-illiññ   al-ä   al-ä
        Kebbede window-DEF NEG-open.IMPF.1SG.S-1SG.O   say.PF-3MSG.S say.PF-3MSG.S
        Kebbede said the window said I will not be opened for me.
        'Kebbede said that the window wouldn't open for me'

The above example is a bit complicated, and so we created a diagram to help our informant imagine the scenario which would lead to (11):

Scenario 1

Kebbede tries to open the window.
Kebbede tells Yohannes that the
window will not open.

Scenario 2

Yohannes tries to open the window.
Kebbede tells Yohannes that the
window will not open.

Later that day…

Yohannes tells Hirut
Utterance A.

The crucial difference between Scenarios 1 and 2 is who is trying to open the window, and thus we are primarily concerned here with the reference of the most deeply embedded indexical, as seen below:

(12) (Yohannes$_U$): Käbbädä$_K$ mäskot-u$_W$ al-ikkäfät$_W$-illiññ$_{\{U?, K?\}}$ al-ä al-ä
       'Kebbede said the window said the window will not open for {Yohannes?, Kebbede?}'

Given example (11) and the diagram, our informant concluded that the sentence was equally ambiguous between Scenario 1 and Scenario 2, meaning that the lowest indexical could refer to either Yohannes or Kebbede:

(13) (Yohannes$_U$): Käbbädä$_K$ mäskot-u$_W$ al-ikkäfät$_W$-illiññ$_{\{U, K\}}$ al-ä al-ä
       'Kebbede said the window said the window will not open for {Yohannes, Kebbede}'

This range of readings provides further support for Schlenker's theory, which predicts the ambiguity for the lowest indexical. As discussed above, Anand and Nevins' theory does not predict the reading in (13).

Taking the scenario one step further, we modified (11) to include an overt indexical in the intermediate clause:

(14) Utterance B:
       Käbbädä mäskot-u   al-ikkäfät-illiññ   al-ä   al-ä-ññ
       Kebbede window-DEF NEG-open.IMPF.1SG.S-1SG.O say.PF-3MSG.S say.PF-3MSG.S-1SG.O
       Kebbede said to me the window said I will not be opened for me.
       'Kebbede said to me that the window wouldn't open for me'

Instead of '*Kebbede said that…*", in (14) we have "*Kebbede said to me that…*", and thus we have a new indexical to which a referent must be assigned:

(15) (Yohannes$_U$): Käbbädä$_K$ mäskot -u$_W$ al- ɨkkäfät$_W$-illiññ $_{\{U?,\ K?\}}$ al-ä   al-ä-ññ $_{[U?,K?\}}$
       "Kebbede said to {Yohannes?, Kebbede?} the window said the window will not open for
            {Yohannes?, Kebbede?}"

We presented our informant with the modified sentence (14), and asked for him to assign referents to
the indexical in both embedded clauses. His answer is as follows:

(16) (Yohannes$_U$): Käbbädä$_K$ mäskot -u$_W$ al- ɨkkäfät$_W$-illiññ $_{\{*U,\ K\}}$ al-ä   al-ä-ññ $_{[U,*K\}}$
       "Kebbede said to {Yohannes, *Kebbede} the window said the window will not open for
            {*Yohannes, Kebbede}"

Our informant assigned the first person indexical in the intermediate clause to the speaker of the
utterance (Yohannes), and assigned the first person indexical object in the lowest clause to the author
of the reported speech act in the matrix clause (Kebbede). Thus the introduction of the indexical in the
intermediate clause caused the lowest indexical to lose its ambiguity, a fact which is predicted by
neither Anand and Nevins nor Schlenker. Schlenker's theory would have predicted the ambiguity in
the lowest indexical remain intact, as intervening indexicals are not predicted to have any effect on
lower indexicals.
    We have presented data demonstrating that Amharic does not obey the No Intervening Binder
constraint, which goes against Anand and Nevins' operator approach to shifting indexicals. However,
as seen in (16), Schlenker's theory also does not sufficiently account for all the data. Schlenker
predicts an ambiguity that is not present, and thus his theory as it currently stands requires restrictions
in order to account for these new data. Although additional informants will be necessary to confirm
these facts, new puzzles are presented here that should be further addressed in theories of shifting
indexicals.

4.2. Data from plural shifted indexicals

    Both Schlenker and Anand give a semantics for first person shifting indexicals that assigns a
singular value to the indexical. This view predicts that such pronouns should not be allowed in
constructions that involve essentially plural predicates. In this section we introduce new data that
shows this prediction is not borne out, and thus both accounts require revisions to accommodate these
facts.
    Higginbotham (1981) observed that despite the presence of a plural pronoun in the embedded
clause, some attitude reports can report on very singular attitudes. For example, the English sentence
(17) can be true if what each candidate said is "I will win".

(17)   The candidates said that they will win

    In Amharic, we find a similar phenomena with shifted indexicals. A plural shifted first-person
indexical can be used in a speech report where the reported speaker's actual speech included a singular
indexical. Just like (17), (18) can be used if what each candidate said is "I will win".

(18)   itʃʼtʃʼu-wotʃtʃ-u   ɨnni-ʃänf-all-än   al-u
         candidate-PL-DEF 1PL.S-win.IMPF-AUX-1PL.S say.PF-3PL.S
         'The candidates said we will win'

One way that this phenomenon has been accounted for in English is to appeal to a rule that removes
the number phi-features from bound pronouns so that they are interpreted as singular (Stechow (2002),
Heim (2008)). This explains how the sentences like (17) and (18) report on singular attitudes even
with the presence of a plural pronoun in the embedded clause.

(19)   LF Feature Deletion Under Variable Binding
         Delete the features of all variables that are bound (Stechow (2002), via Anand (2006))

This rule fits with the analyses of shifting indexicals mentioned above where a singular value, the speaker value, is assigned to the shifting indexical.

We present new evidence from cumulativity and reciprocity that argues against this view, and suggest that the semantic value of plural shifting indexicals is always plural. Both cumulativity and reciprocity have been argued to be licensed by a local semantically plural noun phrase. In the examples we provide below, only the plural shifted indexical fits such a role, thus we conclude that it must be semantically plural contrary to standard approaches to shifted indexicals.

Cumulative interpretations are those cases where there are two (or more) plural noun phrases in a clause and the truth conditions are weaker than the doubly distributive interpretation (Beck and Sauerland (2000)). For example, a cumulative interpretation of (20) is one where Obama dances only with Michelle, and Romney dances only with Ann.

(20)   Obama and Romney danced with Michelle and Ann

In an Amharic speech report with a plural shifted indexical, speakers are able to access a cumulative interpretation of (21) where each candidate said that he will dance with only his wife. Note that 'with' is expressed by a circumposition.

(21)   itʃˈtʃˈu -wotʃtʃ-u   kä-Michelle-na   Ann gar   ɨnni-däns-all-än   al-u
        candidate-PL.DEF   with-Michelle-and Ann with   1PL.S-dance.IMPF-AUX-1PL.S say.PF-3PL.S
        'The candidates said we will dance with Michelle and Ann'

Assuming that cumulativity is a local phenomenon (Kratzer (2005)) that arises when there are two pluralities represented in a clause, we conclude that the shifted indexical in the lower clause must be semantically plural. If it were singular, we would not expect a cumulative interpretion, only the distributive one where each candidate said he would dance with both women.

Reciprocal anaphors are standardly assumed to require a local semantically plural antecedent; see Chomsky (1981), and also Dimitriadis (2000) and Dotlacil (2010) for reciprocals in attitude reports. We found that Amharic speech reports can have a shifted plural indexical in the lower clause together with an essentially reciprocal verb. Since the shifted indexical is the only potential local antecedent for the reciprocal, we conclude that shifted indexical is semantically plural.

(22)   ɨnsäsa-wotʃtʃ-u ɨnni- ggaddɨl -all-än   al-u
        animal-PL-DEF   1PL.S-kill.REC.IMPF-AUX-1PL.S say.PF-3PL.S
        'The animals said that we will kill (each other)'

Heim, Lasnik, and May (1991) give an account of embedded reciprocals where the anaphors may search outside of their local clausal domain to determine antecedence. We refer the reader to Williams (1991), Dalrymple et al. (1994), and Asudeh (1998) for several counterarguments against this approach. The counterarguments support the standard assumption that reciprocals must have a semantically plural and local antecedent. This provides strong evidence that the shifted indexical in (22) is semantically plural.

These new facts pose problems for both types of theories mentioned above. Each of these assign a singular speaker value to the shifted indexical. Given standard assumptions about cumulativity and reciprocity, the singular value should enforce a distributive interpretation for (21) and ungrammaticality for (22). These predications are not borne out, so we conclude that the plural shifted indexicals are semantically plural. Here we just provide a criticism of previous approaches with regards to these new facts, but we refer the reader to LaTerza et al. 2014 for a new approach to shifted indexicals that accounts for these plural data.

5. Conclusion

We have presented novel data which leads to two main generalizations. First, Amharic does not display No Intervening Binder, which contradicts the conclusions made by Anand and Nevins (2004). Although Schlenker (1999, 2003) could predict these facts, Schlenker's theory must have more precise predictions for doubly-embedded contexts.

Secondly, plural shifted indexicals in Amharic can appear with an essentially plural predicate in the embedded clause. Revisions must be made to theories of shifting indexicals in order to accommodate the semantic plurality of plural indexicals.

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