Plural shifted indexicals are plural: evidence from Amharic

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1. Introduction

This paper documents and analyzes the phenomenon of first-personal plural shifted indexicals in Amharic, exhibited below in (1).

(1) *tf’tf’u-wotfsf-u inna-fn-all-show al-u
candidate-PL-DEF 1PL-win.IPFV-AUX-1PL say.PF-3PL

‘[The candidates] said that WE will win’

Our primary goal is to show that plural shifted indexicals are interpreted as semantically plural; a thesis that goes against many previous accounts on the interpretation of plural pronouns that are referentially dependent on an attitude holder nominal. We then offer modifications to Schlenker’s (1999, 2003, 2012) neo-Kaplanian proposals about Amharic shifted indexicals to account for these new facts.

The paper is organized as follows. In §2, we present a summary of the relevant empirical data to be discussed. This will include important data that has already been discussed in the literature, as well as novel data that we have collected from several native speakers of Amharic.1 In §3, we offer arguments for the semantic plurality of plural shifted indexicals, followed by our analysis in §4.2 The paper is concluded in §5.

2. Empirical overview

Shifted indexicals are a relatively recent discovery, and a surprising one at that given that Kaplan (1989) famously conjectured that such things do not exist. He observed, correctly,

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2The content of §3 and §4 are in an abridged form. For a more detailed exposition of the arguments and the formal analysis, we refer readers to LaTerza (2014).

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that English sentences like (2) are not ambiguous with respect to the first-person indexical in the embedded clause, which can only refer to the speaker of the actual speech act, not the speaker of a reported speech act (i.e., John).

(2) John said that I am a hero.

Kaplan hypothesized that this property of English indexicals, often called rigid designation, is a property of indexicals cross-linguistically. Schlenker (1999) introduced Amharic data that falsify this hypothesis. The Amharic equivalent of (2), given below as (3), shows that the indexical is ambiguous in the way Kaplan thought was impossible.

(3) John \[dʒägna nä-ññ\] yi-l-all
    John hero COP-1SG.S 3SGM.S-say.IMPF-AUX.3SGM.S
    ‘John says that \{I am, he is\} a hero’

Schlenker observed that not only can the embedded indexical refer to the speaker of the reported speech act, but when such reference is intended the indexical receives an obligatory De Se interpretation. We refer readers to Lewis (1979), Perry (1979), and Schlenker (2012) especially for detailed discussion of De Se phenomena. For the purposes of this paper, it suffices to characterize a De Se attitude as an attitude about one’s self where it is impossible to be mistaken about who the self is. Certain types of attitude reports in natural language, such as Amharic speech reports with shifted indexicals, obligatorily report a De Se attitude. To see this, consider the truth (3) with respect to the two situations below; S1 and S2 (context and data taken from Anand (2006), based on Schlenker (1999), re-glossed as per our conventions).

(4) S1: John says “I am a hero.”

   S2: 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 this guy must be a hero. This candidate happens to be John himself, although he doesn’t realize it.

   John \[dʒägna nä-ññ\] yi-l-all
   John hero COP-1SG.S 3SGM.S-say.IMPF-AUX.3SGM.S
   ‘John says that \{I am, he is\} a hero.’ [True for S1, False for S2]

In S1, John says something about himself, and he knows for sure that it is himself that he is talking about. In S2, John talks about a third person he has in mind that he knows under some description, but little does he know, he happens to be talking about himself. In other words, in both cases John talks about himself, but only in S1 does he talk about himself De Se. As such, (3) can only be judged true with respect to S1, and is false when used to report on S2.
2.1 Enter plurality

Higginbotham (1981) observed that attitude reports like (5) and (6) can be true in very different types of situations.

(5) John and Mary think that they are sick.

(6) John and Mary want to be sick.

I will label the two interpretations of (5) and (6) as group and dependent readings, which are paraphrased below.

(7) i. Group reading: John and Mary each think/want: “we are sick.”
   ii. Dependent reading: John and Mary each think/want: “I am sick.”

Beck & Sauerland (2000) observed further that the presence of the dependent reading is determined by whether or not there is a pronoun in the embedded clause that is referentially dependent on the attitude holder nominal. They provide examples like (8) to show that the dependent reading is not possible without such a pronoun.

(8) Max and Peter said that Bill married Ann and Amy (*respectively).

We provide new data from Amharic that makes the same point: a dependent reading is not possible without a pronoun in the embedded clause that refers to the speakers of the reported speech act.

(9) Journalist 1 says: “Obama will win.”
    Journalist 2 says: “Romney will win.”

    gazet‘äña-wotšf-u täswädädiri-wotšf-u y-aʃänf-allu
    journalist-PL-DEF candidate-PL-DEF 3PL.S-win.IMPF-AUX.3PL.S
    al-u
    say.PF-3PL.S

    ‘The journalists said that the candidates will win.’ (False in above situation unless the candidates are part of the same group/party.)

As a final preliminary remark, notice that there are no “crossed” reading of (5) and (6), as shown below in English (10) and in Amharic (11).

(10) John and Mary want to be sick.
    Cannot mean: John wants only Mary to be sick, and Mary wants only John to be sick.
In sum, Amharic plural shifted indexicals possess the following properties that need to be accounted for in the semantics: (i) they are obligatorily De Se and (ii) they can have group and dependent construals, but not a crossed one. These issues will be taken up again in §4, but first we turn to discussion of the interpretation of plural shifted indexicals.

3. Essentially plural shifted indexicals

In this section we will argue that Amharic plural shifted indexicals are semantically plural. This may seem like a trivial thesis, but much previous work on plurality in attitude reports actually treats such pronouns as singular. Below I provide rough truth conditions for a singularist treatment of dependent reading of (1), assuming that the denotation of the candidates is Obama and Romney. The shifted indexical is treated as a singular variable that is bound by a (covert) universal quantifier.

\[(12) \forall x : x \in \{\text{Obama}, \text{Romney}\}[x \text{ said } x \text{ wins}]\]

We put aside the De Se properties of the report for the time being, and so (12) is simplified to not express anything about De Se content. The reason for this is that the arguments in this section focus on the singular nature of the variable associated with the shifted indexical in (1), not about its De Se properties. In later sections we will return to the De Se properties of these reports and show how they can be integrated into the semantics given the results from this section. Having said that, we think that it is important to at least recognize that the De Se properties of sentences like (1) provide some initial motivation for a singularist account. De Se attitudes are about an attitude holder’s self, and we take this to be a fundamentally singular notion. If the shifted indexical is the locus of De Se information, then it is plausible that these pronouns should treated as semantically singular. Furthermore, these reports allow dependent readings, which are characterized as reporting the attitudes about a singular individual. This provides further support for singularist truth conditions like (12).

Despite these reasons, we will argue that the semantic value of the plural shifted indexical is always plural when anteceded by a plural noun phrase. The argument for semantic plurality comes from reports where the embedded clauses express cumulativity or reciprocity. These phenomena have been independently argued to require the presence of a local plural noun phrase. In the cases that interest us, only the shifted indexical can fit this role; and therefore since these constructions are well-formed, then the shifted indexical must be plural.\(^3\)

\(^3\)Note that singularist accounts must provide an explanation for the plural morphology on such pronouns. For this, most previous analyses have relied on a rule like the following which essentially removes the number feature from the pronoun so as to make it semantically singular.
3.1 Reciprocity

It is a standard assumption that reciprocal anaphors require an antecedent nominal that is both local and semantically plural; see Fiengo & Lasnik (1973) and Chomsky (1981) among others. Of particular interest to us is the requirement that the local antecedent be semantically plural, as illustrated by (13).

(13) a. The lion and the tiger killed each other.
   b. *He killed each other.

Consider now a reciprocal anaphor in the embedded clause of an Amharic speech report with a shifted indexical.

(14) insisa-wotʃʃ-u inni-ggäddil-all-ān al-u
    animal-PL-DEF 1PL-kill.RECIPIPFV-AUX-1PL say.PFV-3PL
    'The animals said that we will kill each other.'

This sentence has a dependent construal where what each animal said is along the lines of “I will kill that other animal”. Assume further for the sake of simplicity that each animal itself wants to remain alive. If we apply the singularist strategy in (12) as the truth conditions of (14), then the result would be as follows.

(15) ∀ x : x ∈ \{the lion, the tiger\} [x said that x will kill each other]

These truth conditions are unsatisfactory for the dependent meaning of (14). The reciprocal is anteceded by a singular value, the value assigned to the variable x. As such, we would expect the same infelicity here as we see in (13a). Since there is no such infelicity, we can assume that the plural shifted indexical is in fact semantically plural.

(i) LF Feature Deletion Under Variable Binding (Stechow (2003))
   Delete the features of all variables that are bound.

For us, no appeal to such a rule is required, at least for number morphology. We offer the parsimonious alternative that the number morphology is actually reflecting genuine semantic plurality, as it often does with other noun phrases.

Fiengo & Lasnik (1973) offer arguments based on pluralia tantum nouns that it is not enough for the reciprocal’s antecedent to be merely morphologically plural. This is evidenced by the unacceptability of (i) when talking about a single pair of scissors.

*The scissors are connected to each other.

In Amharic, reciprocity is marked by a reciprocal verb form, not an anaphor in an argument position. Nonetheless, there must still be a local plural antecedent.

There exist so-called scopal analyses of reciprocals, such as Heim et al. (1991) that make due with a singular variable in the place of the embedded pronoun. However, several counterarguments have been raised against such analyses; such as Williams (1991), Dalrymple et al. (1994), Asudeh (1998), among others. See LaTerza (2014) for further discussion.
3.2 Cumulativity

Cumulative interpretations of plural sentences were first observed in the semantics literature by Scha (1984), and are characterized by having parts of one plurality related to parts of another but not exhaustively. Consider the following sentence which has a clear cumulative interpretation.\(^7\)

\[(16) \text{Obama and Romney danced with Michelle and Ann.}\]

This sentence can be true if each candidate danced with his own wife and no one else; Obama only danced with Michelle, and Romney only danced with Ann. This is the cumulative interpretation of (16). Crucial for our purposes is that the meaning of (16) does not require that each of Obama and Romney have the property of dancing with both Michelle and Ann.

Consider now this sentence embedded in an Amharic speech report with a shifted indexical.

\[(17) \text{The candidates said we will dance with Michelle and Ann.}\]

Applying the singularist strategy outlined in (12) to this case gives truth conditions that are too strong; they say that each of the candidates want to dance with both women.

\[(18) \forall x : x \in \{\text{Obama, Romney}\}[x \text{ said that } x \text{ will dance with Michelle and Ann}]\]

While this is a possible interpretation of (17), it is not the only interpretation. These truth conditions incorrectly predict a false judgment in a cumulative situation, where each candidate said that he wants to dance only with his wife and no one else. If the value of the shifted indexical were plural in this case, these problems would not arise since local plural values license cumulative interpretations.\(^8\)

\(^7\) Beck & Sauerland (2000); p.350, use the phrase “cumulative interpretation” to refer to “...all cases where a sentence containing two plurals has truth conditions weaker than those of a doubly distributive paraphrase”. This definition will suffice for most of the sentences discussed here, though see Schein (1993) and Sternefeld (1998) for generalized notions of cumulative interpretation suitable for cases with an arbitrary number of plural noun phrases.

\(^8\) Again, there have been treatments of similar cases that posit a singular variable; such as Beck and Sauerland (2000). They make use of a non-lexical theory of cumulativity that has been criticized by authors like Schein (1993) and Kratzer (2005). See LaTerza (2014) for further discussion and counterexamples.
4. Semantic analysis

In this section we provide a brief sketch of the modifications to existing theories of De Se reports needed to account for these facts. We will start with an overview of some fundamental ideas from the semantics of plurality which are needed for the modifications to attitude verb and indexical semantics that follow.

4.1 Plurality

We assume the basic tenets of mereological theories of plurality, as found in Link (1983) and Landman (2000), for example. One core idea, found in almost any theory of plurality, is that the denotation of predicates is closed under sum formation. Below we provide a general principle that encapsulates this idea for predicates of any adicity. I use the standard notational convention of treating upper case variable letters as number-neutral, while lower case variables can only be assigned singular/atomic values.

(19) **Cumulativity Principle**

If \( R \) is an \( n \)-ary relation and both \( \langle X_1, \ldots, X_n \rangle \) and \( \langle Y_1, \ldots, Y_n \rangle \) are in \( R \)'s denotation, then so is \( \langle X_1 \sqcup Y_1, \ldots, X_n \sqcup Y_n \rangle \).

This principle, among other things, is meant to account for inferences like (20).

(20) John kissed Mary.
    Bill kissed Sue.
    \hline
    John and Bill kissed Mary and Sue. \therefore

A central observation about plurality in natural language is that it comes in distributive and collective varieties. For the purposes of this paper, we follow authors such as Link (1984), Roberts (1987), and Lasersohn (1998) in taking collective predication to be basic, and distributive interpretations as derived by the presence of a Distributivity operator, informally defined below.

(21) **The Distributivity Operator**

For any one-place predicate \( P \) and sum of individuals \( X \): \( \d P \) holds of \( X \) iff \( P \) holds of each atomic part \( x \) of \( X \).

To anticipate our proposal somewhat, we propose that the distributive/collective contrast is at work in attitude reports and can be used to account for some of the puzzling properties of plural De Se reports.
4.2 Attitude verbs and plural predication

We assume a context-based theory of attitude reports based on the work of Schlenker (1999) and Schlenker (2003). Formally, a context $c$ is a tuple $\langle c_a, c_t, c_w \rangle$ where $c_a$ is the author/speaker of $c$, $c_t$ is the time of $c$, and $c_w$ is the world of $c$. Schlenker uses contexts to replace possible worlds in traditional denotations of attitude verbs; see Hintikka (1969) and von Fintel & Heim (2012).

(22) $[\text{believe}]^c = \lambda p. \lambda x. \forall c' \in \text{DOX}(x, c_w) [p(c')]$

(23) $[\text{say}]^c = \lambda p. \lambda x. \forall c' \in \text{SAY}(x, c_w) [p(c')]$

Central to these Hintikkan approaches to attitude verb meaning is role of accessibility relations, which are used to determine a set of alternative contexts relative to an attitude holder an evaluation world. Each attitude verb is associated with a corresponding accessibility relation.

(24) $\text{DOX}(x, w) = \{c : c \text{ is compatible with what } x \text{ believes in } w \text{ and } x \text{ is } c_a\}$

(25) $\text{SAY}(x, w) = \{c : c \text{ is compatible with what } x \text{ says in } w \text{ and } x \text{ is } c_a\}$

Our first step is to define a notion of accessibility that is suitable for a plurality of attitude holders. If we are to define a set of contexts that are accessible to Obama and Romney, there are really two possible ways of doing so: it is either the intersection or union of each singular attitude holder’s respect sets given by singular relations like (24) and (25). We believe that the union/sum operation is the appropriate choice given the existence of dependent readings. The plural SAY-accessibility relation thus has the form of (26); (27) illustrates this accessibility relation put to work with our parade case (1).

(26) $\text{SAY}(X, w) = \{c : \exists x [x \leq X \& \text{ATOM}(x) \& c \text{ is compatible with what } x \text{ says in } w \text{ and } x \text{ is } c_a]\}$

(27) $\text{SAY}(o \oplus r, w) = \{c : [c \text{ is compatible with what Obama said and Obama is } c_a] \text{ or } [c \text{ is compatible with what Romney said and Romney is } c_a]\}$

We now turn to the modifications of attitude verb meanings. We start with the observation that the Hintikkan approach to attitude verb meaning can be recast with a distributivity operator; instead of universal quantification over a set of accessible contexts, we have distributive predication over the same set. For any attitude verb AV and accessibility relation $R$, this can be done as follows.

(28) $[AV]^c = \lambda p. \lambda X. D(p(R(X, c_w)))$

So far this is just a notational variant of a standard idea. However, treating attitude verb meanings as a type of plural predication opens up the possibility that other types of plural predication may be at work. This is our proposal about De Se attitude verbs; specifically, the denotation of De Se attitude verbs lack a distributivity operator, and collective predication of contexts is thus possible.
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What does it mean to have collective predication of contexts? For one, it means that a predicate may be collectively satisfied by a sum of contexts in a way that no singular context can do. For example, if the predicate is $\lambda C.[\text{they destroy each other in } C]$, it may be satisfied by the totality of Obama and Romney’s desire contexts taken together, even though that same predicate does not hold of any single accessible context that is a part of $C$. Likewise, $\lambda C.[\text{they dance with Michelle and Ann in } C]$ can describe the collection of Obama and Romney’s desire alternatives, even though each candidate by himself just wants to dance with a single woman.

As the last step of our proposal, we turn to the semantics of the shifted indexical itself. We follow Schlenker in treating the meaning of (first-personal) shifted indexicals as being determined by the author coordinate of the evaluation context. We propose for plural shifted indexicals that the context parameter is pluralized; it is a sum of accessible contexts. This in turn means that the coordinates of the contexts are themselves sums. For the plural indexical then, its value is a plurality of authors.

With these proposals in place, we now provide a simplified derivation of the truth conditions of (1).

The last line of the derivation represents the truth conditions of (1) in prose. We now turn to how these truth conditions are satisfied in dependent and group situations, and how they are not satisfied in crossed situations.

We propose the novel hypothesis that both the dependent and group readings can be satisfied with the same truth conditions; there is no ambiguity, but underspecified truth conditions. This is possible by the Cumulativity Principle (19) applied to the interpretation of $\text{WIN}(C_{a}, C_w)$, which says that the authors of $C$ cumulatively win in the worlds of $C$. 

(29) $[[\text{AV}_{\text{DeSe}}]]^c = \lambda p.\lambda X. p(R(X, C_w))$

(30) $[[\text{shifted indexical}}]^C = \text{the author of } c$

(31) $[[\text{plural shifted indexical}}]^C = \text{the authors of } C$

(32) $[[\text{Obama and Romney said WE will win}}]^C$

$= [[\text{said WE will win}}]^C(o \oplus r)$

$= [[\text{said}}]^C(o \oplus r)(\lambda C'.[[\text{WE will win}}]^C')$

$= [[\text{said}}]^C(o \oplus r)(\lambda C'.\text{WIN}(C_{a}', C_w'))$

$= \lambda p.\lambda X. p(\text{SAY}(X, C_w))(o \oplus r)\lambda C'.\text{WIN}(C_{a}', C_w')$

$= \lambda C'.\text{WIN}(C_{a}', C_w')(\text{SAY}(o \oplus r, C_w))$

$= \text{True iff } \lambda C'.\text{WIN}(C_{a}', C_w') \text{ holds of the sum of Obama and Romney’s compatible SAY-contexts in } C_w$. 

$= \text{True iff the sum of Obama and Romney’s SAY-contexts are such that the authors of those contexts (cumulatively) win in the worlds of those contexts.}$
This can be done for example if Obama wins on Obama worlds, and Romney wins on Romney worlds. This predicate can also be satisfied if both Obama and Romney win on Obama worlds, and Obama and Romney win on Romney worlds. The truth conditions for (1) are satisfied if, at the minimum, the authors win in their respective worlds; there is no restriction that they are the only winners.

The hypothetical crossed reading is ruled out by appealing not just to Obama and Romney, but to Obama and Romney as authors. This qualification is independently required by De Se properties of the report. In the crossed reading, it is true that Obama and Romney cumulatively win in Obama and Romney’s worlds, but it is not true that Obama and Romney as authors are ones that are winning (in this situation, the authors are losing). For reasons of space discussion of this is cut short, and again we refer the reader to LaTerza (2014) for further details, but the essence of the claim is that what makes these report obligatorily De Se is also responsible for the lack of crossed readings.

5. Conclusion

In this paper we have introduced plural shifted indexicals in Amharic. We have argued that these items should be interpreted as semantically plural, contrary to many previous studies on plurality in attitude reports. An analysis was developed that modified Schlenker’s context based system by allowing De Se attitude verbs to represent collective predication of contexts. With this central proposal together with some plural revisions of accessibility relations and the denotation of shifted indexicals, we were able to provide a sketch of the truth-conditional derivations of the range of interpretations available to Amharic attitude reports with shifted indexicals.

References

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