

Plural shifted indexicals are plural: evidence from Amharic¹

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1 Introduction

Main goals:

- Use newly collected data to argue that plural shifted indexicals in Amharic, and perhaps similar pronouns in other languages, must be treated as semantically plural when anteceded by a plural noun phrase.
- Offer modifications to existing analyses of De Se attitude reports to account for these facts.

- (1) *itf'u-wotftf-u inni-fänf-all-än al-u*
 candidate-PL-DEF 1PL-win.IPFV-AUX-1PL say.PF-3PL
 ‘[The candidates]_i said that WE_i will win’

Outline:

- §2 Review background data on indexicality and plural attitude reports
- §3 Present arguments for the semantic plurality of plural shifted indexicals
- §4 Outline a context-based semantic analysis for these facts
- §5 Concluding remarks

2 Empirical overview

The semantic value of an indexical expression depends on the speech context in which it is uttered.

- (2) I am a hero

- (3) John said that I am a hero

In Amharic, the semantic value of an indexical can be determined by a *reported* speech context.

- (4) *John [dzägna 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’

Amharic shifted indexicals are obligatorily De Se (context and data taken from Anand (2006), based on Schlenker 1999, re-glossed as per our conventions).

- (5) 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 [dzägna 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]

2.1 Enter plurality

Higginbotham’s (1981) observation:

- (6) John and Mary think that they are sick
 (7) John and Mary want to be sick
 → Group reading: John and Mary each think/want: “we are sick”
 → Dependent reading: John and Mary each think/want: “I am sick”

Heim et al. (1991), Beck and Sauerland (2000), and others have noticed that the availability of the dependent reading is tied to the presence of a pronoun in the embedded clause; (8). New data from Amharic (9) shows that the dependent reading is unavailable if there is no embedded pronoun.

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

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

- (9) Reporter 1 says: “Obama will win”
Reporter 2 says: “Romney will win”

gazet’ännä-wotftf-u tawädadari-wotftf-u y-afänf-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’)

There is no “crossed reading” at least for obligatory De Se reports like English (10) and Amharic shifted indexical cases (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
- (11) Obama says: “Romney will win”
Romney says: “Obama will win”

tawädadari-wotftf-u inn-afänf-allän al-u
candidate-PL-DEF 1PL.S-win.IMPF-AUX.1PL.S sayPF-3PL.S

‘The candidates said we will win’ (False in above situation)

- This rules out the possibility of analyzing these facts as a case of mere cumulation between attitude holders and the contents of embedded clauses.

→ **Proper descriptive generalization:** dependent readings report about a plurality of self-directed attitudes

Plural shifted indexicals in Amharic

- Show plural morphology
- Allow both group and dependent readings; do not allow crossed readings
- Reports that each attitude holder has De Se attitude about himself

3 Essentially plural shifted indexicals

- Initial truth conditions for dependent reading, (*c.f.*, Maier (2006), Schlenker (2012)): the shifted indexical is treated as a singular variable bound by a universal quantifier.

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

- Plural morphology in dependent reading reports is usually handled by appealing to a feature deletion mechanism like (13); Stechow (2003), Heim (2008), and others. Basically this says that, among other features, number is not semantically interpreted and the bound pronoun is treated as singular.

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

→ We will argue that plural shifted indexicals must be *semantically* plural by considering sentences involving reciprocity and cumulativity.

3.1 Reciprocity

- Standard assumption: reciprocal anaphors must have semantically plural local antecedents.

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

(15) *insäsa-wotftf-u inni-ggäddil-all-än al-u*
animal-PL-DEF 1PL-kill.RECIP.IPFV-AUX-1PL say.PFV-3PL
‘The animals said that we will kill each other’

- **Note:** 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.
- Here **the shifted indexical cannot be singular**, since reciprocals require a semantically plural antecedent.

(16) **Bad truth conditions for (15):**
 $\forall x : x \in \{\text{the lion, the tiger}\}[x \text{ said that } x \text{ will kill each other}]$

Possible counterargument

- (17) Heim et al. (1991):
 LF: The lion and the tiger **each**_{*i*} said x_i will kill t_i (the) other
- Counterarguments to scopal theories of reciprocals:
 - Dalrymple et al. (1994): Does not work for affixal reciprocals, and other reciprocals without a distributive component.
 - Asudeh (1998): The reciprocal’s *each* does not take wide-scope with respect to other operators.
 - Williams (1991): Heim *et al.*’s truth conditions are too strong:
- (18) a. The doctors want to give each other new noses
 b. **Does not mean:** The doctors each want to give another a plurality of noses

3.2 Cumulativity

- (19) Obama and Romney danced with Michelle and Ann
- (20) *itʃʹtʃʹu-wotʃʹtʃʹ-u* *kä-Michelle-na* *Ann gar*
 candidate-PL.DEF with-Michelle-and Ann with
inni-däns-all-än *al-u*
 1PL-dance.PF-AUX-1PL say.PF-3PL
 ‘The candidates said we will dance with Michelle and Ann’
- (20) can be uttered truthfully if Obama said “I will (only) dance with my wife, Michelle”, and Romney said “I will (only) dance with my wife, Ann”.
- (21) **Bad truth conditions for (20):**
 $\forall x : x \in \{Obama, Romney\}[x$ said that x will dance with Michelle and Ann]
- Cumulativity is taken to be a local phenomena obtaining between multiple plural NPs.
 - The presence of a cumulative reading of (20) argues for a semantically plural shifted indexical.
 - If the shifted indexical were semantically singular, we expect only a distributive reading and not a cumulative one.

Possible counterargument

- Beck and Sauerland (2000):
 - treat SI as singular, bound by a QRed matrix subject.
 - cumulativity comes from applying the ** operator (23) to the predicate *want to marry*.
- (22) The two women want to marry the two men
 \rightarrow (the two women) (the two men) ** $\lambda y.\lambda x[x$ want x to marry $y]$
 \rightarrow each of the women wants to marry at least one of the men, and each of the men is such that one of the women wants to marry him.
- (23) ** $R(X, Y) \iff \forall x \in X[\exists y \in Y[R(x, y)]] \ \& \ \forall y \in Y[\exists x \in X[R(x, y)]]$

Problems:

- Kratzer (2005), Schein (1993), i.a.

4 Semantics

4.1 Assumptions about plurality

- Several frameworks for plurality would be suitable.
 - We assume a mereological system here (Link (1983), Landman (2000), i.a.).
- (24) **The Cumulativity Principle**
 If R is an n -ary relation and both $\langle X_1, \dots, X_n \rangle$ and $\langle Y_1, \dots, Y_n \rangle$ are in R ’s denotation, then so is $\langle X_1 \sqcup Y_1, \dots, X_n \sqcup Y_n \rangle$.
- The Cumulativity Principle is meant to account for inferences like (25); see Scha (1984), Link (1983), Krifka (1986), Sternefeld (1998), Landman (2000), Kratzer (2005).

- (25)
$$\frac{\text{John kissed Mary.} \\ \text{Bill kissed Sue.}}{\text{John and Bill kissed Mary and Sue.} \quad \therefore}$$

(26) 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 .

→ Schein (1993), Lasnik (1995) and others have extended the notion of collective predication to different ontological categories like events. We suggest to do so with contexts.

4.2 Attitude verbs and plural predication

- We follow context shifting approaches: Schlenker (1999), Schlenker (2003), Anand (2006)

(27) 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 .

(28) $\llbracket \text{believe} \rrbracket^c = \lambda p. \lambda x. \text{True}$ iff for each context c' compatible with what x believes in c_w , $p(c')$ is True

(29) $\llbracket \text{say} \rrbracket^c = \lambda p. \lambda x. \text{True}$ iff for each context c' compatible with what x says in c_w , $p(c')$ is True

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

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

(32) Intensional Functional Application

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

Pluralizing accessibility relations

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

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

- Q: How is an accessibility relation R defined for a plurality of attitude holders?
- A: $R(X, w)$ is the **union/sum** of the sets of R -compatible contexts for each singular attitude holder.
- Evidence: dependent readings

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

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

Collective predication of contexts Universal quantification: the Hintikka approach

(37) $\llbracket \text{AV} \rrbracket^c = \lambda p. \lambda x. \forall c' \leq R(x, c_w)[p(c')]$

Recasting the Hintikka approach with a distributivity operator: distributive predication of contexts

(38) $\llbracket \text{AV} \rrbracket^c = \lambda p. \lambda x. {}^D p(R(x, c_w))$

Collective predication of contexts:

(39) $\llbracket \text{AV} \rrbracket^c = \lambda p. \lambda x. p(R(x, c_w))$

- **Claim:** At least obligatory De Se reports involve collective predication of contexts as in (39).
- This is consistent with the idea that the LFs of (obligatory) De Se reports are different than those of other attitude reports; see Chierchia (1989), Percus and Sauerland (2003), Schlenker (2012) for discussion.

4.3 The semantics of plural shifted indexicals

The semantic value of a singular shifted indexical is determined by the author coordinate of the context parameter of the interpretation function.

(40) $\llbracket \text{shifted indexical} \rrbracket^c = \text{the author of } c$

Proposal: for plural shifted indexicals the context parameter is pluralized; it is a sum of accessible contexts. In this case, the value of the indexical is a **plurality of authors**.

(41) $\llbracket \text{plural shifted indexical} \rrbracket^C = \text{the authors of } C$

(42) $\llbracket \text{Obama and Romney said WE will win} \rrbracket^C$
 $= \llbracket \text{said WE will win} \rrbracket^C(o \oplus r)$
 $= \llbracket \text{said} \rrbracket^C(o \oplus r)(\lambda C'. \llbracket \text{WE will win} \rrbracket^{C'})$
 $= \llbracket \text{said} \rrbracket^C(o \oplus r)(\lambda C'. \text{WIN}(C'_a, C'_w))$
 $= [\lambda p. \lambda X. p(\text{SAY}(X, C_w))](o \oplus r)(\lambda C'. \text{WIN}(C'_a, C'_w))$
 $= [\lambda C'. \text{WIN}(C'_a, C'_w)](\text{SAY}(o \oplus r, C_w))$
 $= \text{True iff } \lambda C'. \text{WIN}(C'_a, C'_w) \text{ holds of the sum of Obama and Romney's compatible SAY-contexts in } C_w.$

= 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.

Dependent readings

(43) *itf’u-wotftf-u inni-fänf-all-än al-u*
 candidate-PL-DEF 1PL-win.IPFV-AUX-1PL say.PF-3PL

‘[The candidates]_i said that WE_i will win’

(44) Truth conditions for (1)/(43): The authors of C win in C , where C is the sum of SAY-contexts accessible to the candidates

- The truth conditions involve a relation that holds among pluralities; a plurality of authors and a plurality of worlds: $\text{WIN}(C_a, C_w)$
- In the dependent case, we know that *each* singular candidate stands in a relation to only *some* of these worlds.
- Compare with the truth conditions of a cumulative sentence like *The girls kissed the boys*, which is given by the Cumulativity Principle.
- This means that a plural De Se report like (44) is true iff the candidates *as authors* cumulatively win their accessible contexts.

Group readings

- The truth conditions say that the authors win in their contexts. They do not say that *only* the authors win in those contexts.
 - For each context, there could be another candidate besides the author that wins (for example, the author’s vice presidential running mate).
- There is no group/dependent ambiguity; the semantics derives truth conditions that are compatible with both situations.

Ruling out crossed-readings

- Q: Why can’t (44) be true if what each candidate said was “The candidate who is not me will win”?
- A: The author of a context is ontologically privileged. A value of c_a can’t be just Obama, but Obama *as an author*; cf. Lewis (1979), Perry (1979).
- This is presumably independently required to explain the obligatory De Se properties of such reports.
- In the hypothetical crossed reading of (44), it is true that Obama and Romney win in Obama and Romney’s contexts; but it is not true that Obama and Romney *as authors* win in their contexts.

5 Conclusion

- Cumulativity and reciprocity in embedded clauses suggest that plural shifted indexicals have a plural semantic value.
- The semantic plurality of these pronouns speaks against the standard Hintikkan approach to the semantics of attitude reports.
- The main proposals of the analysis is that collective predication of contexts is possible for De Se reports, and that semantic value of a plural shifted indexical is the plurality of authors associated with the reported attitude.
- A compositional analysis was sketched that implemented these main proposals in the framework of Schlenker (1999), (2003), (2012).

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