Reflexivity and Reciprocity in Competition[*]

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May 7, 2019

1 Introduction

- Reflexive and reciprocal situations are often marked identically in a language (Frajzyngier and Curl, 1999; König and Gast, 2008; Nedjalkov, 2007).

    - Identity between reflexive and reciprocal markers reflects the fact that reflexivity and reciprocity inherently overlap: they both express a relation in a set of individuals, which can be given a uniform semantics as in (Murray, 2008).

- However, we also find many languages where reflexive and reciprocal meanings are not expressed by the same marker (e.g., English).

- **Given that reflexivity and reciprocity share some meaning, what strategies (morphological, syntactic, and/or semantic) do languages use to distinguish these situations?**

- The goal of today is to explore reflexive and reciprocal marking in Logoori (Luhia, Bantu).

    - Logoori uses different strategies for encoding reflexive and reciprocal situations such that the markers for each are entirely *independent*, i.e., do not share morphological, syntactic, and semantic information.

- Moreover, the marker for reflexive meaning may also be used to express recip-
rocal meaning in some contexts.

- I argue that in this case, the system must rely on (utterance-level) competition to
determine which marker appears in which context.

- The core takeaway is that the distribution of reflexive and reciprocal markers may be
partly determined by pragmatic factors (in addition to syntactic factors like condition
A).

2   "Anaphoricity" in Logoori

- Like most Narrow Bantu languages, Logoori (Luhia, Bantu, JE 41, `rag`) has a "re-
flexive" and a "reciprocal" marker, *i-* and *-an* respectively.[1]

(1)   a.   REFLEXIVE   b.   RECIPROCAL

Sira a-i-yag-i   *avaana va-yag-an-i*
1Sira 1SM-I-yag-FV   1Imali   1SM-scratch-AN-FV

'Sira scratched himself.'   'The children scratched each
                                               other.'

- *i-* occurs in the slot associated with object markers (and is in complementary distri-
bution with them).[2]

(2)   a.   *Sira a-mu-lol-i*   (3)   a.   *Sira a-i-lol-i*
1Sira 1SM-1OM-see-FV   1Sira 1SM-I-see-FV
'Sira saw him/her.'   'Sira saw himself.'

b.   *Sira a-ga-ho-i*   b.   *Sira a-i-ho-i*
1Sira 1SM-6OM-hear-FV   1Sira 1SM-I-hear-FV
'Sira heard it (the news).'   'Sira heard himself.'

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[1]

- 1/2/3/ : noun class   - OM : object marker
- FV : final vowel   - SM : subject marker

[2]The object markers, including *i-*, are likely to be clitics (Marlo, 2015). Note that there is variation across
Bantu as to whether the object markers may co-occur with over nominals. In Logoori, they cannot.

- *i*- patterns like other reflexive markers in that it is subject to Condition A of binding theory, and is generally subject-oriented.

(4)   a.   *Sira a-vol-i   ndee Imali a-i-lol-i*
             1Sira 1SM-say-FV that Imali 1SM-I-see-FV

             'Sira said that Imali saw herself/*himself.'   LOCALITY

       b.   *vareni vya Sira va-i-lol-i*
             2friend 2of 1Sira 2SM-I-see-FV

             'Sira's friends saw themselves/*himself.'   C-COMMAND

- *i*- does not vary for person or number.

(5)   a.   *ku-i-yag-i*   b.   *nzi-i-yag-i*
             1PL-I-scratch-FV   1SG-I-scratch-FV

             'We scratched ourselves.'   'I scratched myself.'

- *-An* is one of the Bantu "extensions," typically grouped together with the derivational affixes which appear after the verb root.

(6)   a.   *avaana va-lol-an-i*   b.   *avasazi va-yag-an-i*
             2child 2SM-see-AN-FV   2parent 2SM-scratch-FV

             'The children saw each   'The parents scratched each
             other.'   other.'

- *-An* is also subject to Condition A and is generally subject-oriented; in addition *-an* must also appear with a plural antecedent.[3]

(7)   a.   * *avaana va-vol-i   ndee Imali a-lol-an-i*
             2child 2SM-say-FV that Imali 1SM-see-AN-FV

             '*The children said that Imali saw each other.'

       b.   * *mureni ya avaana a-lol-an-i*
             1friend 1of 2child 1SM-see-AN-FV

             '*A friend of the children saw each other.'

       c.   * *Sira a-lol-an-i*
             1Sira 1SM-see-AN-FV

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[3]Logoori also has adverbial strategies that can be used to express reciprocal constructions, including *aveene ku veene*, literally 'themselves to themselves,' and *mla sia mlala*, literally, 'one how the other.'

- This description is standard across (Narrow) Bantu languages (Nurse and Philippson, 2003), though I'll note that Logoori does not have an *associative construction*, which is commonly found among Bantu languages (cf, Dammann 1954; Maslova 2007).

(8)   *Sira a-na-pend-an-a*   *na   Imali*   (Swahili)
       * *Sira   y-a-yaanz-an-a*   *na   Imali*   (Logoori)
       1Sira 1SM-PRES-love-AN-FV and Imali

       'Sira and Imali love each other'

3   Underspecified reflexivity

- *i-* marked verbs are felicitous in so-called "mixed" scenarios (Murray, 2008).

(9)   **Mixed scenario context** : Sira, Imali, and Kageha went hiking and got bitten by mosquitos. Sira scratched his own bug-bites while Imali scratched Kageha's and Kageha scratched Imali's.

   a.   *avaana va-i-yag-i*
         2child   2SM-I-scratch-FV

         'The children scratched themselves/each other.'

   b.   # *avaana va-yag-an-i*
         2child   2SM-scratch-AN-FV

         'The children scratched each other.'

- This suggests that *i-* is "underspecified" in that it does not encode *strict reflexivity* (as in English)[4]

- Note however that is not entirely underspecified: *i-* is felicitous whenever *at least one* member of the subject set is in a reflexive relation. Thus, it is not used in purely reciprocal situations; only *-an* is felicitous in such contexts.

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[4]I'll note this appears appear to be consistent across Bantu languages which have both (cognates of) *i-* and *-an*. For instance, Swahili productively uses the reflexive marker *ji-* in mixed contexts. It is also consistent across the five other Luhia languages I've looked at, as well as in Kuria.

(10)   **Reciprocal scenario context** : Sira, Imali, and Kageha went hiking and got bit-
       ten by mosquitos. Sira scratched Imali's bug-bites, Imali scratched Kageha's and
       Kageha scratched Sira's.

    a.   # *avaana va-i-yag-i*
         2child   2SM-I-scratch-FV

         'The children scratched themselves/each other.'

    b.   *avaana va-yag-an-i*
         2child   2SM-scratch-AN-FV

         'The children scratched each other.'

- Still, the ability for *i-* to express a non-reflexive relation at all suggests that its mean-
  ing is more than just pure "reflexivity."

4   Reciprocity and event quantification

- In addition to its use as the reciprocal maker, *-an* also expresses event plurality.

(11)   a.   *Sira   y-ashiamul-an-i*
           1Sira   1SM-sneeze-AN-FV

           'Sira sneezed over and over.'

    b.   *Sira   a-hanzuk-an-i*
           1Sira   1SM-shout-AN-FV

           'Sira shouted over and over.'

- *-an* may only occur with **intransitive** predicates: it may not attach to transitive verbs
  to express a plural event.

(12)   a.   * *Sira   a-ras-an-i   mpira*
             1Sira   1SM-throw-AN-FV 3ball

             Intended: 'Sira threw the ball over and over.'

    b.   * *Sira   a-hol-an-i   iroli*
             1Sira   1SM-punch-AN 9truck

             Intended: 'Sira punched the truck over and over.'

- Gluckman (2018, in prep) analyzes *-an* as the exponence of event number: it ex-
  presses event plurality for intransitives predicates.

- Because reciprocal situations also involve plural events of intransitive predicates (Kemmer, 1993; Evans et al., 2011), *-an* expresses this meaning in its "reciprocal" use as well.

  – That is, *-an* doesn't mean "reciprocal," rather, it expresses a sub-part of the (complex) meaning associated with reciprocity (as in Davies 2000; Faller 2004).

- More explicitly: I assume that reciprocal situations are a sub-type of **relational plurals**, which are relation between two (or more) plural individuals, e.g., *The children saw the parents* (Fiengo and Lasnik, 1973; Langendoen, 1978; Sauerland, 1998).

  – Reciprocals are the case when the two plural individuals are "indistinct," e.g., *The children$_i$ saw the children$_i$* (Kemmer, 1993). For this reason, reciprocals often pattern as intransitive.

- Relational plurals minimally involve cumulativity (**) and/or distributivity (*) operators (Link, 1983; Beck, 2001), as well as event plurality (PL-EV). The combination of PL-EV and * or ** results in pairs of individuals getting mapped to a plural event, sketched in (15).[5]

  – See appendix for a complete syntax/semantics and derivation.

(13) For any set of events P, PL-EV(P) is the set such that,
    a. $P \subseteq$ PL-EV(P), and
    b.   there are events e', e'' such that $e' \neq e''$ and $e', e'' \in$ PL-EV(P) and $e' \oplus e'' \in$ *PL-EV(P), and
    c.   if $e \in$ *PL-EV(P) and $e', e'' \leq e$, then $e', e'' \in$ P

(14) For any relation between an individual and an event, *(F) is the relation such that, for some event e
    a. $F \subseteq$ *(F), and
    b.   if $\langle x, e \rangle \in$ *(F) and $x' \leq x$, then $\langle x', e \rangle \in$ *(F), and
    c.   if $\langle x, e \rangle \in$ *(F) and there is no $x' \leq x$, then $\langle x, e \rangle \in F$.

- The operators are allowed to apply freely. The combination of PL-EV and two instances of * derives strong reciprocity (i.e., a total mapping between subject and object).

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[5]See Davies (2000); Faller (2004) for comparable ideas in different Madurese and Cuzco Quechua respectively.

(15)   a.   *avaana va-lol-i   avasazi*
             2child   2SM-see-FV

             'The children saw the parents.'

       b. $\exists e$ [*avaana* [* [$\lambda 1$ [*avasazi* [* [$\lambda 2$ [PL-EV [$_{VP}$ t_1 *-lol-* t_2]]]]]]]]

       c. $\exists e \forall x, y[x \in$ CHILDREN $\wedge y \in$ PARENTS $\rightarrow$ *(*(PL-EV(see)))$(y)(x)(e)$]

       d.   "There's a plural event of seeing such that each ordered pair of children and
             parents is mapped to a sub-event of the plural seeing event."

- *-An* is simply the realization of PL-AN with an intransitive predicate.

(16)   a. $\exists e$ [*avaana* [* [$\lambda 1$ [*avaana* [* [$\lambda 2$ [PL-EV [$_{VP}$ t_1 *-lol-* t_2]]]]]]]]

       b. $\exists e \forall x, y[x, y \in$ CHILDREN $\rightarrow$ *(*(PL-AN(see)))$(y)(x)(e)$]

       c.   "There's a plural event of seeing such that each ordered pair of children is
             mapped to a sub-event of the plural seeing event."

- Note that this does not explicitly rule out the reflexive relation — I return to this in
  a moment.

Recap

i- and *-an* are *independent*.

- **No morphological overlap**: they do not share phonological shape or template
  position.

- **No syntactic overlap**: They are of different categories.

- **No semantic overlap**: *i-* expresses a relation between individuals, and *-an* is
  a quantifier over events.

Logoori uses two different strategies for expressing reflexive and (pure) reciprocal
situations (contra Mchombo 1993; Baker et al. 2013).

- Reflexivity is expressed directly, i.e., *i-* indicates that there is a relation *in* a
  set of individuals, including the reflexive relation.

- Reciprocity is expressed *compositionally*. There is no one thing that means
  "reciprocal," rather the meaning is a sum of different interacting processes.

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5   Co-occurrence

- Because *i-* and *-an* are independent, we can immediately explain why they can co-occur (see Safir and Sikuku 2018 for similar observations in Lubukusu, a related Luhia language).[6]

(17)   a.   *avaana va-i-yag-an-i*
             2child   2SM-I-scratch-AN-FV
             'The children scratched themselves/each other (a lot).'

         b.   *Sira   y-i-yag-an-i*
             1Sira 1SM-*i*-scratch-FV
             'Sira scratched himself a lot.'

- (17a) is felicitous in the **mixed scenario context** above; the addition of *-an* simply reinforces that there is a plural event.

- In (17b), the addition of *-an* asserts that the event is plural.[7]

6   Competition

- **If *i-* is underspecified, then why not use that instead of *-an*?** That is, if *i-* can independently be used to express a reciprocal situation, then why bother using *-an* at all?

- We can understand this if utterances marked with *i-* are in competition with utterances marked with *-an*.

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[6]I note that a plural event with intransitive predicates is sometimes expressed without *-an*, just in the case that event plurality is otherwise inferable. For instance, *avaana vashiamuli*, 'The children sneezed' involves a plural event of sneezing, but the addition of *-an* is not necessary (though it is possible) in this context because sneeze naturally involves distribution of individuals over events.

[7]A Lubukusu example:

(i   *ba-khasi ba-a-i-khosy-an-a*   *ba-b-eene ne   ba-b-eeene*
      2-woman 2SM-PAST-RFM-photograph-RCM-FV 2-2-own   with 2-2-own

     '(The) women photographed each other.'   (Safir and Sikuku, 2018, 44)

Baker et al argue that the co-occurrence of reflexive and reciprocal markers in Lubukusu stems from the fact the markers instantiate different heads in the syntax which license a direct object anaphor. Note that Lubukusu differs from Logoori in that it has a comitative (aka associative construction) with *-an* and *-an* cannot be used to indicate event plurality alone. Gluckman (in prep) suggests that languages associate-*an* treat *-an* as a quantifier over individuals.

- Since *i-* is felicitous is *-an* contexts, but not vice versa, I assume that *i*-marked predicates are "stronger" than *-an*-marked predicates.

- We therefore expect that an utterance with *-an* can be pragmatically strengthened to *i-*, but not vice versa.

(18)   a.   *avaana va-i-yag-i*
            2child   2SM-I-scratch-FV
            'The children scratched themselves.'

       b.   *# Indiyo, va-yag-an-i*
               Yes,   2SM-scratch-AN-FV
            'Yes, they scratched each other.'

(19)   a.   *avaana va-yag-an-i*
            2child   2SM-scratch-AN-FV
            'The children scratched each other,

       b.   *Indiyo, va-i-yag-i*
            Yes,   2SM-I-scratch-FV
            'Yes, they scratched themselves.'

- To account for the fact that *i-* requires there to be at least one reflexive relation it's possible to encode this directly into the meaning of the morpheme, but it's also possible to explain this as a result of pragmatics.

    – If a speaker uses *i-*, then the hearer infers that there must be at least one person in a reflexive relation, otherwise the speaker would have used *-an*.

- This allows us to keep the meaning for *i-* completely underspecified.

- Note finally that the competition is at the utterance level. Since *i-* and *-an* are completely independent, it does not make sense to consider them as part of a Horn scale like ⟨every, some⟩.

7   Conclusion

- Though reflexivity and reciprocity share some semantic overlap, a language may use different strategies to encode the different relations.

- In general, reciprocity seems to involve *compositionality* in a way that reflexivity doesn't (Heim et al., 1991; Nedjalkov, 2007). This is presumably due to the fact that reciprocal meaning is simply more complex that reflexive meaning.

- It possible though that one marker expresses some piece of meaning that is compatible with both contexts.

  - Here we see that *i-*, because it's underspecified, is possible in both reciprocal and reflexive situations.

  - Another example may be detransitivization morphology (cf., Greek; see e.g. Nedjalkov 2007).

- In this case, if a language wishes to grammatically distinguish the categories, then it must rely on some further process.

  - This could involve competition, as suggested above, when the markers are entirely independent.

  - It could also involve additional morphology *in addition to* the reflexive (i.e., bipartite constructions; see Nedjalkov 2007).

- More importantly, though reflexive and reciprocal makers are often broadly considered to fall into the class of "anaphora," in fact within a language there may be no class that subsumes both markers (cf, Safir 1996).

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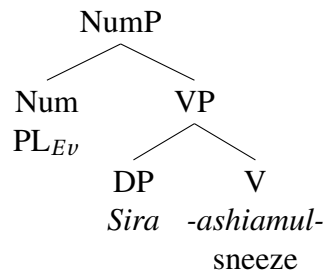
Appendix

(20) $\llbracket \mathrm{PL}_{Ev} \rrbracket = \lambda f_{vt} \lambda e.\ {}^{*E} f(e)$

(21)   For any set of events P, ${}^{*E}P$ is the set such that,

     a. $P \subseteq {}^{*E}P$, and

b.   there are events e', e'' such that $e' \neq e''$ and $e', e'' \in {}^{*E}P$ and $e' \oplus e'' \in {}^{*E}P$, and

c.   if $e \in {}^{*E}P$ and $e', e'' \leq e$, then $e', e'' \in {}^{*E}P$, and

d.   if $e \in {}^{*E}P$ and there is no $e' \leq e$, then $e \in P$.[8]

(22)   a.   *Sira   y-ashiamul-an-i*
             1Sira 1SM-sneeze-REC-FV
             'Sira sneezed repeatedly.'

        b.
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                NumP
               /    \
            Num      VP
            PL_Ev    /  \
                   DP    V
                 Sira  -ashiamul-
                        sneeze
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        c. $\text{PL}_{Ev}(\lambda e.\text{Sira-sneezed}(e))$

        d. $\lambda e.{}^{*E}\text{Sira-sneezed}(e)$

(23) $[\![\text{DISTR}]\!] = \lambda F_{\langle e, vt \rangle} \lambda x \lambda e.\ {}^{*D}F(x)(e)$

(24)   For any relation between an individual and an event, ${}^{*D}F$ is the relation such that, for some event e

        a. $F \subseteq {}^{*D}F$, and

        b.   if $\langle x, e \rangle \in {}^{*D}F$ and $x' \leq x$, then $\langle x', e \rangle \in {}^{*D}F$, and

        c.   if $\langle x, e \rangle \in {}^{*D}F$ and there is no $x' \leq x$, then $\langle x, e \rangle \in F$.

(25)   a.   [*avaana* [DISTR [1 [$_{NumP}$ PL$_{Ev}$ [t_1 -*shiamul*-]]]]]

        b. $\exists e[[\lambda x \lambda e.{}^{*D*E}\text{sneeze}(x)(e)]([\![avaana]\!])](e)$

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[8]Part (d) is typically left out of definitions of plurality, though it is crucial. Take the following definition of *.

 (i) Let S be any set of entities. *S is defined as the smallest set such that:

    (a) S $\subseteq$ *S

    (b) For all $x, y \in {}^*$S, $x + y \in {}^*$S   (Cable, 2012, 7)

Under this definition, *S allows in its extension events which may not be events of *S*. Thus, *sneeze allows events of coughing, laughing, jumping, etc as long as their mereological sum is also in *sneeze. The problem is that we only want elements of S and their sums in *S, but this is not guaranteed. This appears to be a persistent problem in definitions of the Link's plural operator. Credit goes to Andrew McKenzie for pointing out this issue.

        c. $\exists e \forall x[x \leq \text{CHILDREN} \rightarrow *^{D}*^{E}\text{sneeze}(x)(e)]$

(26) a.   *avaana va-lol-an-i*
             2child   2SM-see-AN-FV
             'The children saw each other'.

        b.   [*avaana* [DISTR [2 [*avaana* [DISTR [1 [[$_{NumP}$ PL$_{Ev}$ t_2 *-lol-* t_1]]]]]]]]

        c. $\exists e[[[\lambda x \lambda y \lambda e.*^{D}*^{D}*^{E}\text{see}(x)(y)(e)](\llbracket avaana \rrbracket)](\llbracket avaana \rrbracket)](e)$

        d. $\exists e \forall x,y[x,y \leq \text{CHILDREN} \rightarrow *^{D}*^{D}*^{E}\text{see}(x)(y)(e)]$