

The syntax, semantics, and morphology of plural events and reciprocity in Logoori

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Markers of reciprocity (e.g., *each other*) are well known to display a high degree of **polysemy** within a language (Frajzyngier and Curl, 1999; König and Gast, 2008; Nedjalkov, 2007; Evans et al., 2011).

Types of reciprocal polysemy I

Three main types of reciprocal polysemy (Nedjalkov, 2007):

Reflexive-reciprocal : The same marker is used for reflexive and reciprocal situations (cf Murray 2008)

- (1) Les enfants se voient
the children SE see.PRES
'The children see each other'
'The children see themselves'

French

Types of reciprocal polysemy II

Sociative-reciprocal : The same marker is used to mean "together (with)" and reciprocal

- (2) kör-üs
see-US
'to see each other'
'to see (something/somebody) together'

Yakut Nedjalkov 2007, p. 17

Types of reciprocal polysemy III

Iterative-reciprocal : The same marker is used to signal a plural event and a reciprocal (cf Lichtenberk 1999; Davies 2000)

- (3) a. avaana va-lol-**an**-i
 2child 2SM-see-AN-FV
 'The children saw **each other**.'
- b. Sira y-ashiamul-**an**-i
 1Sira 1SM-sneeze-AN-FV
 'Sira sneezed repeatedly.' Logoori (Luhya, Bantu)

-an marks a **reciprocal situation**

- robustly found across Bantu languages (Maslova, 2007) and reconstructed in Proto-Bantu (Schadeburg, 2003b; Nurse, 2008).

Types of reciprocal polysemy IV

Iterative-reciprocal : The same marker is used to signal a plural event and a reciprocal (cf Lichtenberk 1999; Davies 2000)

- (4) a. avaana va-lol-**an**-i
 2child 2SM-see-AN-FV
 'The children saw each other.'
- b. Sira y-ashiamul-**an**-i
 1Sira 1SM-sneeze-AN-FV
 'Sira sneezed **repeatedly**.' Logoori (Luhya, Bantu)

-an marks a **plural event**

- less well attested in Bantu (see (Schadeburg, 2003a) for an example from Kela, and (Maslova, 2007) for Kikongo)

The problem of polysemy

Why polysemy? How can one morpheme express multiple meanings?

- ↪ It's just a case of **accidental syncretism/homophony**.
 ... probably not if it occurs consistently across languages
- ↪ There's only **one morpheme** which is expressed in multiple environments due to its syntactic, semantic, and morphological properties.

We would need to do an in-depth investigation in a particular language...

Goal for today: explain the polysemy!

- 1 Go in-depth into Logoori and explore the syntax, semantics, and morphology of *-an*.
- 2 Develop a core set of properties that *-an* always seems to express, and cash this out theoretically.
- 3 Show how the proposed analysis explains an apparently unrelated use of *-an* with embedded clauses.
- 4 Place *-an*'s "polysemy" among expressions of reciprocity cross-linguistically.

Proposal

The suffix *-an* is a **cumulative event pluralizer** which selects for **events with a single participant**.

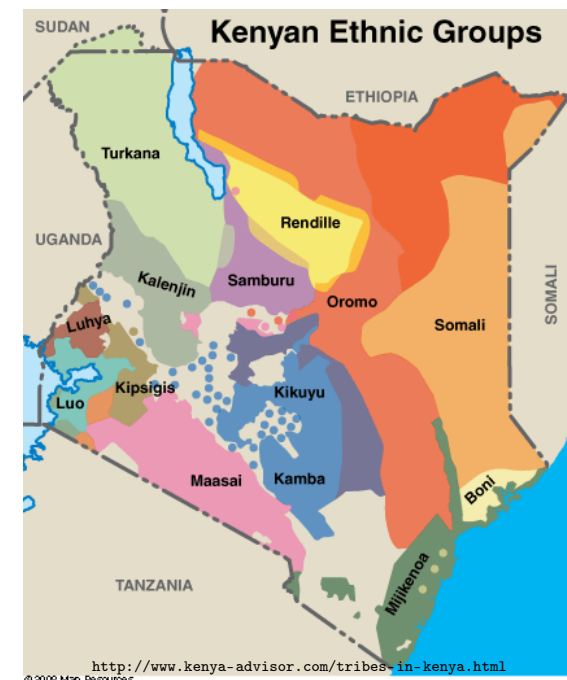
- ↪ **Syntactic distribution** : explains valency and antecedent restrictions
- ↪ **Morphological distribution** : explains interaction with other suffixes
- ↪ **Semantic distribution** : explains both iterative and reciprocal meaning

Roadmap

- 1 Introduction
- 2 Overview of Logoori
- 3 Iterative use
 - Cumulative plurality
 - Intransitive restriction
 - (Near) root adjacency
- 4 Accounting for the iterative use
- 5 Comparison to reciprocal use
 - Conflicting properties
 - A uniform distribution
 - The last piece of the puzzle
- 6 Another use? Embedded clauses
- 7 Reciprocal polysemy in perspective
- 8 Conclusion

Overview of Logoori

- One of ≈25 Luhya languages spoken in Western Kenya and Uganda
 - JE41 (Niger-Congo>Southern Bantoid>Bantu>Lacustrine)
 - aka Logoli, Maragoli, Luragooli, Llogoori, among others
- Healthy and stable population of speakers (≈2 million)
 - Ex-urban daily life is conducted primarily in 1st language (tribal language)
 - Swahili and English are widely spoken (taught in schools)
- Data from 4 consultants collected on-site in Kenya and in Los Angeles in structured elicitations





Overview of Logoori I

- Two tones, grammatical and lexical, tone spreading, down-step (Samuels and Paster, 2015; Marlo, 2017)
 - (5) ku-áá-kí-¹kúút-a
 1PL.SM-REM.PAST-7OM-scratch-FV
 ‘We scratched it₇ (a long time ago).’
 (Samuels and Paster, 2015, p. 5)
- in standard orthography (used here):
 - Tones aren’t marked; long vowels are
 - ng’ = ŋ; ny = ɲ

Overview of Logoori II

- S-V-O, pro-drop, no case marking, prepositions
- Verbal template:
 Agr_{subj} – tns – (Agr_{obj} –) ROOT – deriv – asp – final vowel
- (6) Sira a-a-lol-anj-i vibaga
 1Sira 1SM-PAST-see-HAB-FV 8cat
 ‘Sira saw cats regularly (two weeks ago).’
- 17 noun classes (generally grouped in pairs of sg/pl)
- At least 7 tenses (4 past, 1 present, 2 future)

The iterative use

- (9) Sira y-ashiamul-an-i
 1Sira 1SM-sneeze-AN-FV
 ‘Sira sneezed repeatedly.’
- ① **Syntactically**, -an only attaches to intransitive verbs.
- ② **Morphologically**, -an always appears next to (or near to) the root.
- ③ **Semantically**, -an expresses a cumulative plural event (in the sense of Krifka 1989).

Property 1: Cumulative plurality I

Informally, an event is cumulatively plural if it is perceived as being a single event of P with multiple sub-events of P.

- (10) Sira y-ashiamul-an-i
Sira 1SM-sneeze-AN-FV
'Sira sneezed repeatedly.'

- ① ✓ *Sira had a fit of sneezing.*
② ✗ *Over the course of the day, Sira sneezed multiple times.*

Property 2: Intransitive restriction

Only attaches to intransitive verbs

- *kwishiamul-an-a* 'to sneeze repeatedly,' *kwum-an-a* 'to freeze (intrans) over and over,' *kusunduk-an-a* 'to spill (intrans) here and there,' *kuvezagir-an-a*, 'to belch repeatedly'

- (12) * Sira a-ras-an-i mpira
1Sira 1SM-throw-AN-FV ball
[intended: 'Sira threw the ball repeatedly']

-an attaches to **semantic**, rather than **syntactic** intransitives.

A clear distinction when considering two ways to derive intransitive predicates in Logoori: **passive** vs. **anticausative**.

Property 1: Cumulative plurality II

- (11) kisaga ki-vun-ik-an-i
7branch 7SM-break-AC-AN-FV
'The branch broke in many pieces.'

- ① ✓ *Sira stepped on a branch, and it broke in many pieces.*
② ✗ *Over the course of the day, many people stepped on a branch, breaking it in many pieces.*

↪ A cumulative plural event is a single event with (identical) sub-events.

Passive vs. anticausative

Passives in Logoori are syntactically intransitive, but semantically transitive ↪ **two event participants**

- (13) mpira gu-ras-w-i (na Sira)
3ball 3SM-throw-PASS-FV by Sira
'The ball **was thrown** (by Sira).'

Anticausatives in Logoori are syntactically **and semantically** intransitive ↪ **one event participant** (Gluckman and Bowler, 2016a), see also (Schäfer, 2008) a.o.

- (14) mpira gu-ras-ik-i (*na Sira)
3ball 3SM-throw-AC-FV by Sira
'The ball **was thrown** (by Sira).'

Restriction to semantic intransitives

-an can only attach to intransitives derived by the anticausative *-ik*.

- (15) a. *mpira gu-ras-**w-an-i** (na Sira)
3ball 3SM-throw-PASS-AN-FV by Sira
b. mpira gu-ras-**ik-an-i** (*na Sira)
3ball 3SM-throw-AC-AN-FV
'The ball was thrown over and over.'
(i.e., it was juggled)

Transitive pluralizer

-an is in complementary distribution with *-any* (orthographic <*-an*>), which is the cumulative event pluralizer for semantically transitive situations

- (16) *Sira y-ashiamul-**any-i**
1Sira 1SM-sneeze-ANY-FV
[intended: 'Sira sneezed repeatedly.']
(17) Sira a-ras-**any-i** mpira
1Sira 1SM-threw-ANY-FV ball
'Sira threw the ball repeatedly' (i.e., he juggled the ball).
(18) mpira gu-ras-**any-w-i**
3ball 3SM-throw-ANY-PASS-FV
'The ball was thrown repeatedly' (i.e., it was juggled).

Property 3: (near) root adjacency

-an always appears root adjacent (unless following the anticausative).

- (19) Applied arguments:

Sira y-ashiamul-**an-il-i** Imali
1Sira 1SM-sneeze-AN-APPL-FV Imali
'Sira sneezed repeatedly for Imali.' (*yashiamul-*il-an-i*)

- (20) Causative:

Sira y-ashiamul-**an-iz-i** Imali
Sira 1SM-sneeze-AN-CAUS-FV Imali
'Sira made Imali sneeze repeatedly.' (*yashiamul-*iz-an-i*)

- (21) Aspect:

mpira gu-ras-**ik-an-ag-aa**
3ball 3SM-throw-AC-AN-PROG-FV
'The ball is being thrown a lot.' (*guras-*ik-ag-an-a*)

Summary of iterative use

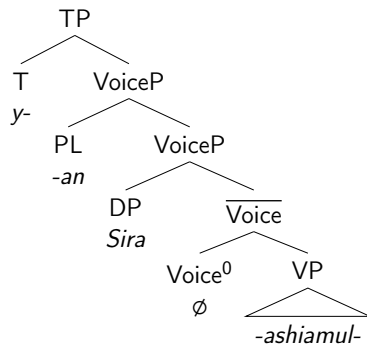
Minimum we need to explain,

- **Meaning** \rightsquigarrow indicates cumulative plural event
- **Syntactic distribution** \rightsquigarrow "semantic" intransitives
- **Morpho-syntactic location** \rightsquigarrow outside of valency reducing (anticausatives), inside of valency increasing (applicatives, causatives)

Analysis: *-an* as an event pluralizer

-an selects for phrases which describe properties of events (\approx VoiceP) which have a single argument and asserts that the event is cumulatively plural.

(22)

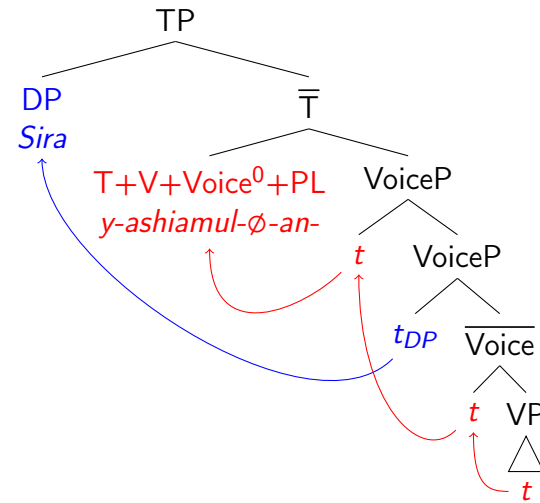


non-crucial assumptions

- ext. args. in VoiceP
- Tense = Agr
- no final vowel

crucial assumptions

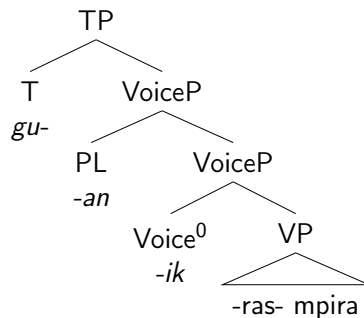
Lower = closer to root i.e.,
Mirror Principle (Baker, 1985)



Accounting for morpho-syntactic location I

Since the anticausative *-ik* derives intransitives, *-an* attaches above this head (assumed to be Voice⁰ (Schäfer, 2008)). By head movement, *-an* appears outside of *-ik*.

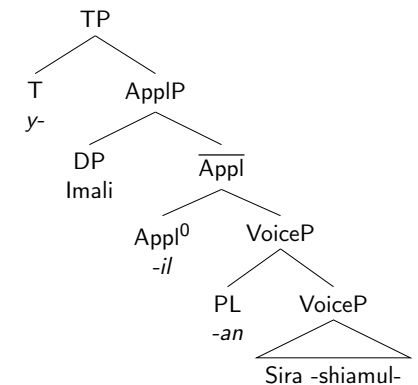
(23) mpira gu-ras-**ik-an-i**
3ball 3SM-throw-**AC-AN-FV**
'The ball **was thrown over and over.**'



Accounting for morpho-syntactic location II

Since applicatives/causatives increase valency (Pykkänen, 2008), they only attach *above* *-an*, and hence appear outside.

(24) Sira y-ashiamul-**an-il-i** Imali
Sira 1SM-sneeze-**AN-APPL-FV** Imali
'Sira sneezed **repeatedly for Imali**'



Summary of iterative use

- **Meaning** \rightsquigarrow cumulatively pluralizes single-participant event
- **Syntactic distribution** \rightsquigarrow therefore only selects for phrases describing single-participant events
- **Morpho-syntactic location** \rightsquigarrow therefore appears outside of valency decrease and inside of valency increase

A uniform distribution?

The reciprocal use seems to directly contradict the properties outlined above.

Attaches to transitives (obligatorily):

(25) *avaana va-lol-an-i*
2child 2SM-see-AN-FV

'The children ...'

Can appear outside

(26) *avaana va-lol-an-i*
2child 2SM-see-AN-FV

'The children shouted **at each other**.'

Imposes restrictions on subject (Condition A Chomsky 1981)

(27) **avaana va-vor-i* [*ndii Maina a-lol-an-i*]
2child 2SM-say-FV that 1Maina 1SM-see-AN-FV

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

These are all (morpho-)syntactic properties.

A semantic generalization

-an has a uniform distribution because **reciprocal situations involve a cumulative plural event with a single event participant** (Kemmer, 1993; Schein, 1993; Evans et al., 2011) a.o.

(28) *The children saw each other*

\rightsquigarrow **a single participant** because there is just one NP – *the children*.

\rightsquigarrow **cumulatively plural** because there is a single event with sub-events.

Ultimately: *-an* expresses a **subset** of reciprocal meaning.

Additional assumption: nouns scopally interact \rightarrow reciprocity!

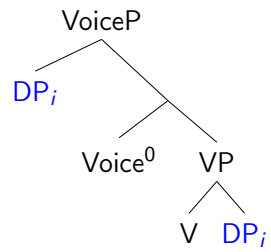
Roadmap for reciprocal use

Step 1: Given what we know about *-an*, show why it appears in reciprocal structures, and account for morphological and syntactic constraints.

Step 2: Tackle the meaning.

A single event participant

Reciprocal situations are **semantically intransitive** because they only involve a single referential expression, i.e., one event-participant.



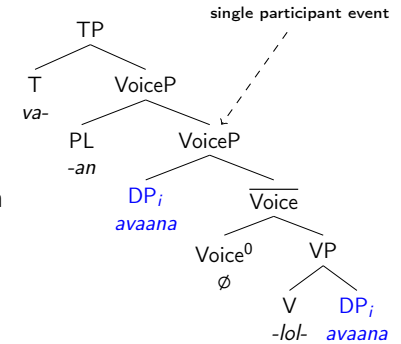
Describes an event involving a single participant (mapped to subject and object roles) (Kemmer, 1993; Klaiman, 1991) a.o.

↔ correlation between rec./refl. and morph./synt. valency reduction (König and Gast, 2008; Nedjalkov, 2007)

Consequence

Since *-an* selects for properties of events with a single participant, it can select for transitive verbs – as long as they have a single event participant.

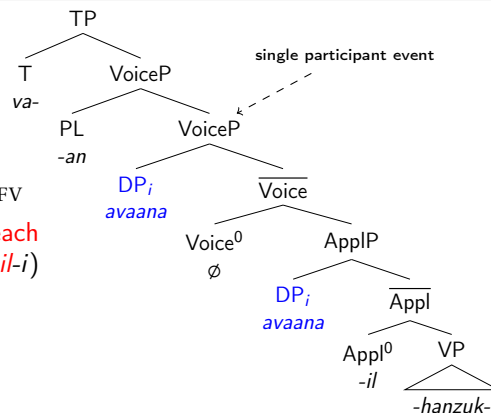
- (29) *avaana va-lol-an-i*
 2child 2SM-see-AN-FV
 'The children saw each other.'



Morpho-syntactic location

Semantic intransitivity corresponds to multiple syntactic configurations

- (30) *avaana va-hanzuk-il-an-i*
 2child 2SM-shout-APPL-AN-FV
 'The children shouted **at each other**' (≠ *vahanzuk-an-il-i*)



Syntactic constraints I

Cannot be used in a double object construction
 ... with complications, see appendix

- (31) * *avikura va-many-il-an-i ipicha*
 2boy 2SM-show-APPL-AN-FV picture
 [intended: 'The boys showed each other a picture.']
- (32) *avikura va-many-i ipichi*
 2boy 2SC-show-FV picture
aveene ku veene
themselves to themselves
 'The boys showed a picture **to each other**.'

↔ this event includes two participants, *the boys* and *a picture*.

Syntactic constraints II

Enforces syntactic locality (e.g., Condition A Chomsky 1981) and general subject-orientation.

- (33) * **avaana** va-vor-i [ndii Maina
2**child** 2SM-say-FV [that 1Maina
a-lol-**an**-i]
1SM-see-**AN**-FV]
'*The **children** said that Maina saw
each other.'

↪ doesn't have a
semantically intransitive
event

- (34) * Sira a-many-**an**-i **avaana**
1Sira 1SM-show-**AN**-FV 2**child**
[intended: 'Sira showed **the children**
each other (in the picture).']

↪ there's no phrase
that describes a
single-participant event

Interim summary

Because *-an* selects for single-participant events,

- **syntactic distribution** ↪ restricted to two-argument predicates (and restrictions on antecedent are derived)
- **morphological distribution** ↪ can appear outside of valency increasing morphology
- **semantics** ↪ ??

Cumulative plurality I

A reciprocal situation is perceived as a single event, which is comprised of sub-events (Kemmer, 1993; Schein, 1993)

- (35) *Last week, Imali stared at Sira. The following day, Sira stared at Imali.*

- a. # Sira na Imali va-hondolel-an-i
Sira and Imali 2SM-stare-AN-FV
'#Sira and Imali stared at each other.'

Speaker comment: "This only makes sense if Sira and Imali are staring at each other at the same time."

Cumulative plurality II

- (36) *On Tuesday, Sira kicked Imali. On Wednesday, Imali kicked Sira.*

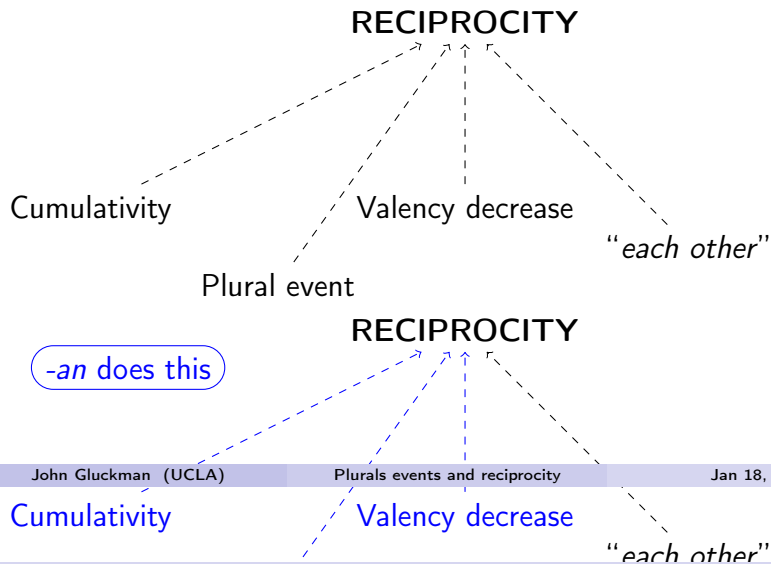
- a. # Sira na Imali va-nagiz-an-i
Sira and Imali 2SM-kick-AN-FV
'#Sira and Imali kicked each other.'

Speaker comment: "No... They did it on different days? They need to do it like one after the other."

Overall consistent with *-an*'s meaning... **but what else?**

Weak vs. strong relations

-an expresses a cumulative, single participant event, but this is only part of a reciprocal meaning.

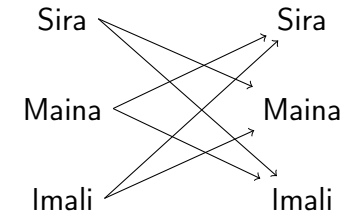


Strong and weak reciprocity I

Strong reciprocity

≈ Every individual acts on every (other) individual, and every individual is acted on by every (other) individual.

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

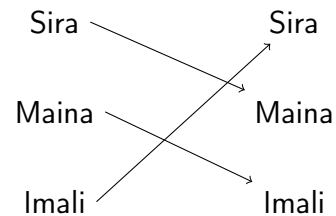


Strong and weak reciprocity II

Weak reciprocity

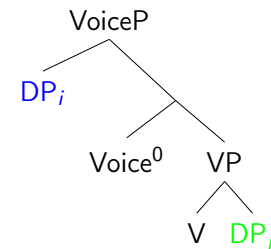
≈ Every individual acts on with some (other) individual, and every individual is acted on by some (other) individual.

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



... there are many ways for a situation to be weakly reciprocal (Dalrymple et al., 1998; Evans et al., 2011) a.o.

Non-reciprocal strong and weak



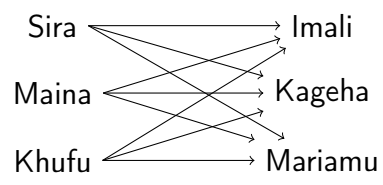
The weak vs. strong readings for reciprocity are exactly paralleled by weak vs. strong readings with **relational plural** sentences (Fiengo and Lasnik, 1973; Langendoen, 1978; Beck, 2001), a.m.o

Strong and weak relational plurals I

Strong relation

≈ Every individual in the subject acts on every individual in the object, and every individual in the object is acted on by every individual in the subject.

(39) avikura va-vagaa va-lol-i avakana
 2boy 2-three 2SM-see-FV 2girl
 va-vagaa
 2-three
 'Three boys saw three girls.'

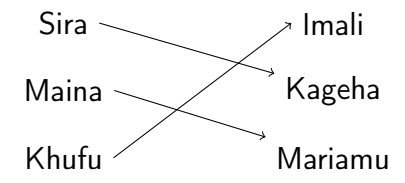


Strong and weak relational plurals II

Weak relation

≈ Every individual of the subject acts on some individual of the object, and every individual of the object is acted on by some individual of the subject.

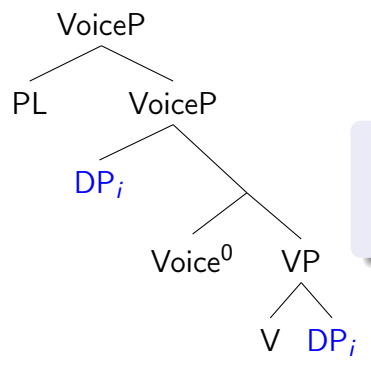
(40) avikura va-vagaa va-lol-i avakana
 2boy 2-three 2SM-see-FV 2girl
 va-vagaa
 2-three
 'Three boys saw three girls.'



... there are many ways to be weakly relational (Langendoen, 1978; Sternefeld, 1998; Beck, 2001), a.o.

Scope of subject and object

The relationship between the subject and the object is independent of reciprocity, and can be attributed to independently needed processes pairing the subject and the object (Fiengo and Lasnik, 1973; Heim et al., 1991; Schein, 1993; Sternefeld, 1998; Beck, 2001; Murray, 2008), a.o



↪ a cumulative plural event with a single participant
 ↪ DPs are not scopally independent

Summing up

Treating *-an* as a cumulative event pluralizer which selects for single-participant events accounts for,

- Syntactic distribution** ↪ valency restrictions and constraints on antecedent (Condition A!)
- Morphological distribution** ↪ linear ordering of morphemes (different orderings!)
- Semantic distribution** ↪ the same meaning in all contexts (iterative and reciprocal meaning!)

... only possible by considering **all** properties.

Extension: *-an* on clausal embedding verbs

A curious use of *-an* that has received a fair bit of attention in other (Narrow) Bantu languages is in clausal embedding contexts (cf Mchombo 1993; Dubinsky and Simango 1996; Seidl and Dimitriadis 2003), also (Gluckman and Bowler, 2016b)

- (41) a. e-lol-ek-a kulesia Sira a-zi-i
9SM-look-AC-FV like 1Sira 1SM-go-FV
'It looks like Sira left.'
- b. e-lol-ek-**an**-a kulesia Sira a-zi-i
9SM-say-AC-**AN**-FV like 1Sira 1SM-go-FV
'It looks like Sira left.'

-an is **optional** — but speakers do not have strong intuitions about a meaning difference.

Prediction: a plural “looking” event I

Context 1: ***You come home and see that Sira's jacket is gone.***
Context 2: *You, Kageha, and Maina come home, and you all see that Sira's jacket is gone.*

- (42) a. e-lol-ek-a kulesia Sira a-zi-i
9SM-look-AC-FV like 1Sira 1SM-go-FV
'It looks like Sira left.'
- b. ?? e-lol-ek-**an**-a kulesia Sira a-zi-i
9SM-look-AC-**AN**-FV like 1Sira 1SM-go-FV
'It looks like Sira left.'

(52a) preferred over (52b) in Context 1

Prediction: a plural “looking” event II

Context 1: *You come home and see that Sira's jacket it gone.*
Context 2: ***You, Kageha, and Maina come home, and you all see that Sira's jacket is gone.***

- (43) a. ?? e-lol-ek-a kulesia Sira a-zi-i
9SM-say-AC-FV that 1Sira 1SM-go-FV
'It looks like Sira left.'
- b. e-lol-ek-**an**-a kulesia Sira a-zi-i
9SM-say-AC-**AN**-FV that 1Sira 1SM-go-FV
'It looks like Sira left.'

(53b) preferred over (53a) in Context 2.

Putting *-an* in perspective I

The term “polysemy” may be a misnomer with respect to reciprocal markers. **Maybe just realizing “pieces” of reciprocity.**

- **Reflexive-reciprocal** markers grammaticalize the relation between the subject and object (Murray, 2008).
- **Sociative-reciprocal** markers grammaticalize the plurality of the single participant.
- **Iterative-reciprocal** markers grammaticalize the plural event.
 - ▶ Sub-types? Madurese iterative-reciprocal markers don't assert cumulativity of the event (Davies, 2000).

Putting *-an* in perspective II

Reciprocity involves a number of complex semantic and syntactic operations

- ↪ cumulative event plurality, valency reduction, (cumulative) nominal plurality, distributivity, locality, c-command, ...

Languages may choose to grammaticalize (or recruit morphology for) just one part. Other processes in the language “pick-up the slack.”

- ↪ See the numerous bi-partite reciprocal markers (Nedjalkov, 2007) a.o.

Conclusion

An understanding of “polysemy” through a close inspection of syntactic, semantic, and morphological properties.

Further questions

- **Emergent binding theory?** What does it mean that Condition A is just a side-effect of *-an*'s selectional requirements?
- **What is the range of meanings of the cognate suffixes across Luhya?** Across Bantu?
 - ▶ How do they interact with various (language-specific) syntactic/morphological properties in those languages?
- **What are the limits of polysemy?** How much or how little meaning can be attributed to a single morpheme? How much can we attribute to other processes (cf, Safir and Sikuku 2018)

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Appendix: Reflexives

Mchombo (1993, 2004); Dalrymple et al. (1998) observe that in Bantu languages, reflexive and reciprocal situations differ languages: while reciprocals pattern like *intransitives*, reflexives pattern like *transitives* (See also (Safir and Sikuku, 2018) for a critical discussion in Lubukusu.)

- (44) Sira y-ii-lol-i
 1Sira 1-REFL-see-FV
 'Sira saw himself.'

Appendix: Ditransitives

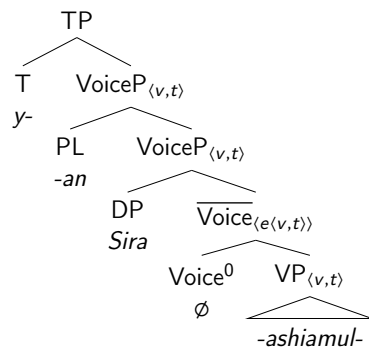
There are two periphrastic ways to express reciprocity: *aveene ku veene*, lit, 'themselves to themselves' and *m̄la sia mlala* lit: 'the one how the one.'

Additionally double object constructions can be formed by adding a *reflexive* prefix to the front of the verb, and stacking applicative morphology outside of *-an*.

- (45) avikura va-ii-many-an-il-i ipicha
 2boy 2SM-REFL-show-AN-APPL-FV ipicha
 'The boys showed each other a picture.'
 [maybe: 'The boys showed the picture *amongst themselves*']

Semantics of cumulativity

(46)



[[56]] = 1 iff $\exists e, e' [\text{Sira-sneeze}(e) \ \& \ \text{Sira-sneeze}(e') \ \& \ e \neq e' \ \& \ \forall e, e' [\text{Sira-sneeze}(e) \ \& \ \text{Sira-sneeze}(e') \ \rightarrow \ \text{Sira-sneeze}(e \oplus e')]]$