Reciprocal and Plural Events in Logoori

John Gluckman, UCLA ACAL 49, Michigan State University March 23rd, 2018

1 Introduction

- Cross-linguistically, markers of reciprocity are known to display a higher degree of **polysemy**: the same marker used for reciprocal situations also serves some other function(s) in the language (Lichtenberk, 1985; Frajzyngier and Curl, 1999; König and Gast, 2008; Nedjalkov, 2007).
- Today I address one such case in Logoori (Luhya, Bantu, JE41): the verbal extension *-an* can be used to indicate a **reciprocal situation** (1a) as well as an **iterated event** (1b).¹
- (1) 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.'
- **Reciprocal-iterative polysemy** is well attested cross-linguistically (Frajzyngier and Curl, 1999; Nedjalkov, 2007; König and Gast, 2008), suggesting that the pattern in Logoori is not accidental.

The extension *-an* always has the same meaning: *-an* expresses a cumulative plural event for single-participant events.

- \rightsquigarrow transparently observed in (1b).
- \rightsquigarrow part of the meaning of reciprocity found in (1a).

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AC : Anticausative APPL : Applicative CAUS : Causative FV : Final Vowel PRES : Present PASS : Passive

PAST : Past REFL : Reflexive SM : Subject Marker

- *-an*'s morphological and syntactic distribution and properties in both iterative and reciprocal use are a direct result of its meaning.
- **Bigger picture**: Reciprocal "polysemy" arises when languages grammaticalize subcomponents of the complex semantics of reciprocity (and other processes "pick up the slack")

Roadmap:

- **§1** Iterative use
 - Property 1: Cumulative plurality
 - Property 2: Single-participant events
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 - Predictions: morphosyntactic location
- §2 Reciprocal use
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 - Accounting for (morpho-)syntax
 - Weak vs. Strong readings (relational plurals)
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- **§4** Appendices:
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2 Iterative use

• Attached to some verbs, *-an* can be used to indicate an iterative, or sometimes intensive, event Table 1 (cf Maslova 2007; Nurse and Philippson 2003 for similar uses in other Bantu languages).

kumera	'to grow' (intr)	kumerana	'to grow fast, a lot'
kumeeda	'to increase' (intr)	kumeedana	'to increase steadily.'
kusunduka	'to spill' (intr)	kusundukana	'to spill here and there'
kwoneka	'to be destroyed'	kwonekana	'various parts to be destroyed'
kulanyika	'to be plundered'	kulanyikana	'to be completely trashed'
kwuma	'to freeze' (intr)	kwumana	'to freeze over and over'
kuvunika	'to break' (intr)	kuvunikana	'to break into pieces'
kwishiamula	'to sneeze'	kwishiamulana	'to sneeze over and over.'
kwivora	'to give birth'	kwivorana	'to breed, increase in #'s'
kuhanzuka	'to shout'	kuhanzukana	'to shout over and over'
kunagora	'to run'	kunagorana	'to run over and over, keep running'
•••			

Table 1: Iterative/intensive uses of -an. (Ku- is the class 15 infinitival prefix.)

- In its iterative use, -an expresses,
 - 1. that the event involves a **single participant** (≈ restricted to intransitives)
 - 2. a cumulative plural event

2.1 Property 1: Cumulative plurality

- Informally, an event is cumulatively plural if it is perceived as being a single event of P with multiple sub-events of P.
 - (2) Sira y-ashiamul-an-i
 Sira 1SM-sneeze-AN-FV
 'Sira sneezed repeatedly.'
- 1. \checkmark Sira had a fit of sneezing.
 - 2. X Over the course of the day, Sira sneezed multiple times.

- (3) kisaga ki-vun-ik-an-i
 7branch 7SM-break-AC-AN-FV
 'The branch broke in many pieces.'
 1. V Shu stepped broke in many
 2. X Over the copeople stepped
- 1. ✓ Sira stepped on a branch, and it broke in many pieces.
 - X Over the course of the day, many people stepped on a branch, breaking it in many pieces.

2.2 Property 2: Single-participant events

- *-an* cannot be used to pluralize the event of a transitive verb:
- (4) a. * *Sira a-ras-an-i mpira* 1Sira 1SM-throw-AN-FV 3ball [intended: 'Sira threw the ball repeatedly']
 - b. * *Sira a-duy-an-i Imali* 1Sira 1sM-hit-AN-FV 1Imali [intended: 'Sira hit Imali repeatedly.'
- It's restricted to intransitives more specifically, *-an* only pluralizes **single participant events**.
- This is evident in its restriction to co-occuring with only one kind of derived intransitive (**syntactic** vs. **semantic** intransitivity).
- Two derived intransitives in Logoori: **passive** and **anticausative** (Gluckman and Bowler, 2016).
- (5) a. mpira gu-ras-w-i (na Sira) PASSIVE
 3ball 3SM-throw-PASS-FV by Sira
 'The ball was thrown (by Sira)'
 b. mpira gu-ras-ik-i (*na Sira) ANTICAUSATIVE
 3ball 3SM-throw-AC-FV by Sira
 'The ball was thrown (by Sira).'
 ≈ 'The ball threw.'
- Passives involve (implicit or explicit) reference to the Agent \rightsquigarrow two event participants.
- Anticausatives do not permit (implicit or explicit) reference to the Agent → one event participant (cf, Kemmer 1993; Schäfer 2008 a.o)

• -an can only pluralize anticausatives. (See also examples in Table 1.)²

(6)	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 repeatedly.' (i.e., it was juggled)		
(7)	a.	* amaaze ga-sund-w-an-i бwater бѕм-spill-pass-an-fv		
	Ъ.	amaaze ga-sund-uk-an-i 6water бѕм-spill-AC-AN-FV		
		'The water spilled here and there.' [Speaker comment: 'Like when the waiter brought it to the table. It was sloshing around.']		
• NB: There is a distinct transitive (cumulative) event pluralizer <i>-any</i> (<-an>)				
(8)	a.	* Sira y-ashiamul-any-i 1Sira 1sm-sneeze-ANY-FV		
		[intended: 'Sira sneezed repeatedly.']		
	Ь	Cina a nas any i mpina		

- b. Sira a-ras-any-i mpira
 1Sira 1SM-threw-ANY-FV ball
 'Sira threw the ball repeatedly' (i.e., he juggled the ball).
- c. *mpira gu-ras-any-w-i* 3ball 3SM-throw-ANY-PASS-FV

'The ball was thrown repeatedly' (i.e., it was juggled).³

d. * mpira gu-ras-ik-any-i 3ball 3SM-throw-AC-ANY-FV

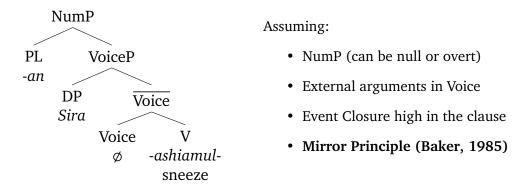
²There is no phonological reason to rule out (6a), (7a). Also, no other ordering of the suffixes works.

³Note the different ordering of the pluralizer and voice morphology: *-any* must **precede** the passive, but *-an* must **follow** the anticausative. I believe this reflects the different function of anticausative vs. passive heads, rather than a (morpho-)syntactic difference between the two different event pluralizers. Your input is welcome!

2.3 Defining iterative -an

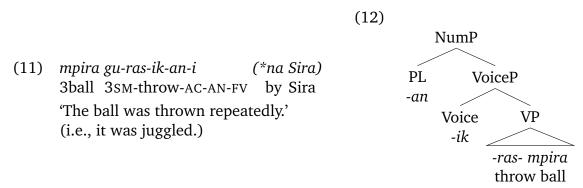
- Given these two properties, I define *-an* as a cumulative event puralizer, with a presupposition such that the events it pluralizes only have a single participant.⁴
- (9) $\begin{bmatrix} -an \end{bmatrix} = \lambda P_{\langle v, st \rangle} \lambda e_1 \lambda e_2 \lambda w : \\ Presupposition: \forall e[P(e)(w) \rightarrow e \text{ has a unique event participant}] \\ \underline{Assertion:} [P(e_1)(w) \& P(e_2)(w) \& e_1 \neq e_2] \& \forall e', e''[P(e')(w) \& P(e'')(w) \rightarrow P(e' \oplus e'')(w)]$





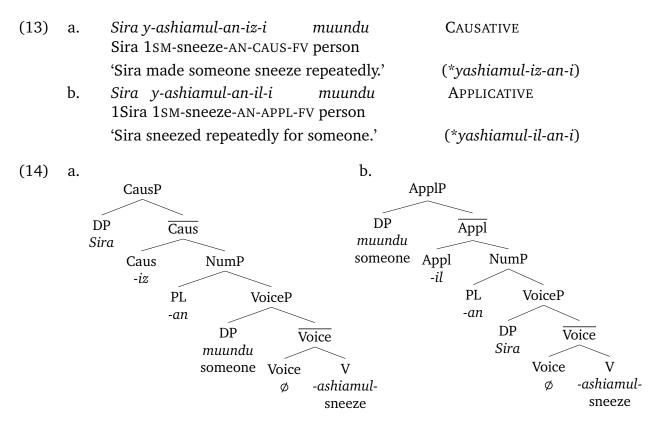
2.4 Prediction: morphosyntactic location

• Iterative-*an* always appears **outside** of valency decreasing morphology (when applicable). That is, it only appears after an single-participant-event verb phrase has been derived.



⁴The definition of cumulativity (minus the presupposition) is adapted from (Krifka, 1989). There are known objections to putting universal quantification in a presupposition (Heim, 1983) vs. (Beaver, 2001). Your insights are welcome if you have a solution that avoids this.

• Iterative-an always appears inside of valency increasing morphology.



- Confirmation for syntactic order: applied arguments must scope over event pluralizer.
 - In (13b)/(14b), it cannot be the case that there are multiple people and Sira sneezed for each of them.

Summary of iterative use

-an is used to indicate a cumulative plural event for events which have a single participant.

- \rightsquigarrow accounts for meaning.
- \rightsquigarrow accounts for (morpho-)syntactic distribution.

3 Reciprocal use

- *-an* may be used to indicate a reciprocal situation. This is robustly found across (Narrow) Bantu languages (cf, Dammann 1954; Mchombo 1993b; Maslova 2007; Dalrymple et al. 1994; Nurse and Philippson 2003, a.o.)
- (15) a. avaana va-lol-an-i
 2child 2sM-see-AN-FV
 'The children saw each other.'
 - b. Sira na Imali va-duy-an-i
 1Sira and 1Imali 2sm-hit-AN-FV
 'Sira and Imali hit each other.'
 - c. *Sira na Imali va-a-yaanz-an-a* 1Sira and 1Imali 2SM-PRES-love-AN-FV 'Sira and Imali love each other.'
 - d. avaana va-yag-an-i
 2child 2sM-scratch-AN-FV
 'The children scratched each other.'
 - Reciprocal-*an* has many of the core properties we associate with reciprocal markers.
 - 1. Locality/c-command conditions on the antecedent (e.g., Condition A)
 - (16) a. * 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.'
 - b. * muremi y-a avaana a-lol-an-i
 1friend 1-of 2child 1sM-see-AN-FV
 '*The children's friend saw each other.'
 - 2. Antecedent must be **plural**:
 - (17) a. * *Maina a-lol-an-i* 1Maina 1SM-see-AN-FV '*Maina saw each other.'

- 3. \approx **Subject-oriented** (depends on how "subject" is defined)
 - (18) * Sira a-many-an-i avaana
 1Sira 1SM-show-AN-FV 2child
 [intended: 'Sira showed the children each other (in the mirror).']

4. Appears outside of valency increasing morphology.

(19)	9) a. avaana va-sek-iz-an-i		CAUSATIVE
		2child 2sm-laugh-CAUS-AN-FV	
		'The children made each other laugh.'	(≠vasek-an-iz-i)
	b.	avaana va-hanzuk-il-an-i	APPLICATIVE
	2child 2sm-shout-appl-an-fv		
		'The children shouted at each other'	(≠vahanzuk-an-il-i)

- NB: -an does not appear in the associative construction⁵ in Logoori, commonly found in Bantu languages (Dammann, 1954; Vitale, 1981; Maslova, 2007).
- (20) 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'

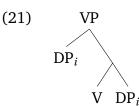
Core observation

Many of the reciprocal properties are not observed in — or even directly contradict — the iterative use. However, despite the syntactic and morphological differences, *-an* has a uniform *semantic* distribution:

Reciprocal situations are also cumulatively plural events with a single (plural) event participant (Klaiman, 1991; Kemmer, 1993; Evans et al., 2011).

⁵Also called the *sociative, comitative* or *discontinuous* reciprocal (Nurse and Philippson, 2003; Maslova, 2007). Note that associative constructions are possible with inherently reciprocal predicates like *kwaagana*, 'to meet,' *kufana* 'to resemble,' etc. Note further that all inherently reciprocal verbs appear to bear a lexicalized *-an* marker at the end.

Reciprocal situations describe single-participant events (Klaiman, 1991; Kemmer, 1993):⁶



 \rightsquigarrow describes an event with a single participant (DP_i) which is mapped to two grammatical positions.

- 2. Reciprocal situations are **cumulatively plural events** (Kemmer, 1993; Schein, 1993)
 - (22) 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."]

- (23) 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."]

• Consistent with saying that *-an* pluralizes the single-participant event — which can be realized in different syntactic configurations:



⁶Note that reciprocals do not act *syntactically intransitive* in Logoori, unlike in Chichewa (Dalrymple et al., 1994; Mchombo, 1993a). (See also Safir and Sikuku 2018 for a similar observation for Lubukusu.)

• *-an* does not "come with" reciprocal meaning. This is accomplished through other processes (discussed in subsection 3.4).

3.1 Accounting for Condition A

- Because it is restricted to single-participant events, c-command and locality are enforced.
- (24) a. * 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.'
 - b. * muremi y-a avaana a-lol-an-i
 1friend 1-of 2child 1sm-see-AN-FV
 '*The children's friend saw each other.'
 - The verb phrase containing *-lol-*, 'see' doesn't describe a single-participant event in either (24a) or (24b).

3.2 Accounting for subject-orientation

- -an cannot be anteceded by the Goal in a Double-Object Construction:
- (25) * Sira a-many-an-i avaana
 1Sira 1SM-show-AN-FV 2child
 [intended: 'Sira showed the children each other (in the mirror).']
 - The verb phrase doesn't describe an event with a single-participant in (25).

3.3 Accounting for morpho-syntactic location

• *-an* pluralizes any phrase that describes a single-participant event. Thus, it appears **outside** of valency increasing morphology in its reciprocal use.

(26) avaana va-sek-iz-an-i CAUSATIVE 2child 2sm-laugh-CAUS-AN-FV 'The children made each other laugh.' (*≠vasek-an-iz-i*) NumP single participant event CausP PL -an DP_i Caus avaana Caus VoiceP -iz DP_i Voice avaana Voice V -ashiamul-Ø sneeze (27) avaana va-hanzuk-il-an-i APPLICATIVE 2child 2SM-shout-APPL-AN-FV 'The children shouted at each other' (≠vahanzuk-an-il-i) NumP single participant event PL VoiceP -an DP_i Voice avaana Voice⁰ ApplP Ø DP_i Appl avaana $Appl^0$ V -hanzuk--il

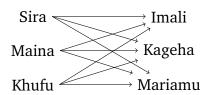
3.4 The rest of reciprocity

• In Logoori, *-an* appears to express just some of the meaning found in reciprocity. Where does the rest of the reciprocal meaning come from?

 Cumulatively 	 Collectivity
 Event plurality 	 Nominal plurality

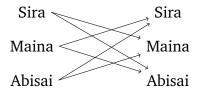
- (Semantic) intransitivity Distributivity
- There's a noted parallel between the various readings found when two plural DPs scopally interact in **relational plural sentences** and the various readings found in **reciprocal situations** (Fiengo and Lasnik, 1973; Langendoen, 1978; Dalrymple et al., 1994; Beck, 2001) a.o.⁷
- (28) avikura va-vagaa va-lol-i avakana va-vagaa
 2boy 2-three 2SM-see-FV 2girl 2-three
 'Three boys saw three girls.'

Strong reading:



(29) avikura va-vagaa va-lol-an-i
2child 2-three 2SM-see-AN-FV
'Three boys saw each other.'

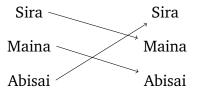
Strong reading:



Sira Imali Maina Kageha Khufu Mariamu

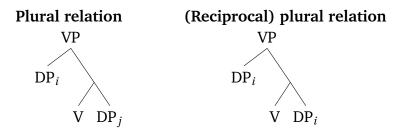
Weak reading (one of many):

Weak reading (one of many):



⁷There are many ways a reciprocal/plural relation can be "weak" (Fiengo and Lasnik, 1973; Langendoen, 1978; Heim et al., 1991; Dalrymple et al., 1994; Beck, 2001). Under the right contexts, all the ambiguities are available in Logoori as well for both relational plurals, as well as reciprocals.

• The different readings are the result of having two plural NPs in the structure: they are not scopally independent.



• There are many of formal theories for how to treat interacting scopal elements (Heim et al., 1991; Beck, 2001; Sternefeld, 1998; Murray, 2008). I believe any of these are consistent with my proposal.

Summary

Reciprocity in Logoori is conveyed through a "mixture" of independent elements:

- *-an* provides the cumulative event and single-participant meaning.
- Scopal interaction of DPs provides the rest.

Note that *-an* is *not* an anaphor in this analysis — there is no reciprocal anaphor *per se*. (Though see Appendix for evidence that the reflexive is "unselective," covering both reciprocity and reflexivity (as in Safir 1996).

4 On reciprocal polysemy cross-linguistically

- Markers of reciprocity display a high degree of polysemy cross-linguistically (König and Gast, 2008; Nedjalkov, 2007).
- Among the various types of polysemies, it's notable that the second meaning is always something that forms a sub-component of overall reciprocal meaning.
 - Reciprocal-reflexive polysemy (e.g., Romance SE) : the marker expresses a relation between identical individuals (cf, Murray 2008 for Cheyenne; Safir 1996)

- Reciprocal-sociative polysemy (e.g., Turkish) : the marker expresses the collective/cumulative plurality of the single event participant (cf Dixon 1988 for Boumaa Fijian)
- **Reciprocal-iterative polysemy** (e.g., Logoori) : the marker expresses the plural event (cf Davies 2000 for Madurese)
- That is, we don't find, say, a **reciprocal-telic** polysemy, or a **reciprocal-definite** polysemy, because these telicity/definiteness aren't sub-components of RECIPROCITY.
- This suggests that reciprocal "polysemies" are actually mislabelled: The patterns observed are strategies of "cobbling together" a reciprocal meaning by grammaticalizing, or simply recruiting morphology for, the different subcomponents that make up RECIPROCITY.
 - This idea is supported by bipartite reciprocal constructions e.g., English, Lezgian, (Evans et al., 2011; Nedjalkov, 2007).
- On variation across Bantu: Since *-an* cognates are extensively used across Bantu languages, but are generally closer to sociative markers, it's possible that other Bantu languages treat *-an* as a purely nominal or unselective cumulative/collective pluralizer (cf Maslova 1999 for general discussion along these lines).
- All this leaves open the relation to reflexives for which see appendix.

Thanks!

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Appendix: Reflexives

- The reflexive prefix is consistent with a reciprocal meaning:
- (30) Sira, Maina, and Kageha went out hiking and got bug-bites. Sira scratched himself, but Maina and Kageha scratched each other's bug-bites.

avaana va-i-yeg-i 2child 2SM-REFL-scratch-FV 'The children scratched themselves/each other.'

- In general, as long as *at least one* participant is acting reflexively, then the reflexive is preferred. (Though I have some sparse examples where the reflexive also has a truly reciprocal meaning.)
- This suggests that *i* in Logoori is similar to Romance SE, i.e., it has the semantics of both a reflexive and a reciprocal.
- We might hypothesize that conventional implicative governs the distribution of the reflexive vs. the reciprocal:
 - By using -an speakers express that there is some reciprocal relation, and addressees infer from the fact that *i*- wasn't used that no one acted reflexively.
 - I.e., use the "weaker" form when the "stronger" form doesn't apply.
 - Note that this explain why reciprocal-*an* isn't used with singular antecedents, because such a situation entails that the event involves reflexive action.

Appendix: Double Object/Complement Constructions

- In general, *-an* isn't possible in a Double Object/Complement constructions (on its own).
- (31) * avikura va-many-an-i ipicha
 2boy 2SM-show-AN-FV picture
 [intended: 'The boys showed each other a picture.']
- (32) * avikura va-many-an(-il)-i Imali
 2boy 2SM-show-AN-APPL-FV picture
 [intended: 'The boys showed each other to Imali.']
 - Two strategies for Double Object/Complement constructions:
 - 1. Reciprocal meaning can be expressed with *aveene ku veene* (lit: "themselves to themselves") or *mla sia mlala* (lit: 'the one how the other") (see Safir and Sikuku 2018 for discussion in Lubukusu)
 - 2. The **reflexive marker** and the **reciprocal** are employed together. (And sometimes an **applicative** is needed. The applicative must occur after the reciprocal.)⁸

⁸See also data for Lubukusu in Sikuku (2011)

- (33) a. avikura va-many-i ipichi aveene ku veene
 2boy 2sc-show-FV picture themselves to themselves
 'The boys showed a picture to each other.'
 - b. avikura va-i-many-an-il-i ipicha
 2boy 2SM-REFL-show-AN-appl-FV 9picture
 'The boys showed each other a (specific) picture.'
 - c. avikura va-i-many-an-i Imali
 2boy 2SM-REFL-show-AN-FV 1Imali
 'The boys showed each other to Imali.'
 [Maybe: 'The boys showed Imali among themselves.']

Appendix: Stative-reciprocals

- An additional use of *-an* in many Bantu languages is its appearance on verbs which take embedded finite clauses (Mchombo, 1993a; Dubinsky and Simango, 1996; Seidl and Dimitriadis, 2003), so-called *stative-reciprocals*.
- (34) e-lol-ek(-an)-a ndii Sira a-zi-i
 9SM-look-AC-AN-FV that 1Sira 1SM-go-FV
 'It looks like Sira left.'
 - We predict here that *-an* in such contexts should indicate the plurality of the main clause event in Logoori.

Context 1: You come home and see that Sira's jacket is gone.

- (35) a. *e-lol-ek-a kulesia Sira a-zi-i* 95M-look-AC-FV like 1Sira 15M-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.'

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

- (36) 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
 - 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.'

Context 2: Your trusted friend Maina has been going around town saying that Sira went to Kisumu.

- (37) a. *ga-vol-ek-i ndii Sira y-a-zi-a Kisumu* 6SM-say-AC-FV that 1Sira 1SM-PAST-go-FV Kisumu 'It's said that Sira went to Kisumu.'
 - b. ?? ga-vol-ek-an-i ndii Sira y-a-zi-a Kisumu 6SM-say-AC-AN-FV that 1Sira 1SM-PAST-go-FV Kisumu 'It's said that Sira went to Kisumu.'

Context 2': Your trusted friend Maina and all his friends have been going around town saying that Sira went to Kisumu.

- (38) a. ?? ga-vol-ek-i ndii Sira y-a-zi-a Kisumu 6SM-say-AC-FV that 1Sira 1SM-PAST-go-FV Kisumu 'It's said that Sira went to Kisumu.'
 - b. *ga-vol-ek-an-i ndii Sira y-a-zi-a Kisumu* 6SM-say-AC-AN-FV that 1Sira 1SM-PAST-go-FV Kisumu 'It's said that Sira went to Kisumu.'