

Reciprocity and Plural Events in Llogoori*

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Abstract

I investigate the suffix *-an* in Llogoori (Luhya, Bantu). I show first that sentences with *-an* correspond to a traditional *reciprocal* meaning, similar to the cognate suffix in Chichewa, among other Bantu languages (Dalrymple et al., 1994; Nurse and Philippson, 2003; Mchombo, 2004; Maslova, 2007). I further illustrate that *-an* has a second use as an *event pluralizer*. *-An* attaches to predicates which are syntactically and semantically intransitive, creating a cumulative plural event. I propose that this is the core meaning of *-an*: it's merely an event pluralizer—a claim which is in line with the noted relationship between events and reciprocity (Schein, 2001; Nedjalkov, 2007). Following a long line of work, I adopt the idea that the reciprocal meaning just comes from the semantics of plural individuals (Heim et al., 1991; Beck, 2001; Sternefeld, 1998; Sauerland, 1998). In other words, there is no morpheme that by itself has a reciprocal semantics. The combination of a cumulative plural event and a plural individual results in a reciprocal meaning given the independent meanings for both.

Keywords: [reciprocity; events; plurality; Bantu; Luhya]

This article is concerned with the suffix *-an* in Llogoori, (Luhya, Bantu). I illustrate here that *-an* has two functions. It is foremost a marker of a *reciprocal relation*, (1a), as commonly observed for cognate morphemes across Bantu (Nurse and

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Philippson, 2003; Schadeburg, 2003). The second use is decidedly non-reciprocal, more closely identifiable as a marker of an *iterated event*, (1b).

- (1) a. *Sira na Imali va-ror-an-i*
 Sira and Imali 2-see-AN-FV
 ‘Sira and Imali saw each other.’¹
- b. *Sira y-ashiamul-an-i*
 Sira 1-sneeze-AN-FV
 ‘Sira sneezed repeatedly.’

As the connection between multiple events and reciprocity has been noted elsewhere (Davies, 2000; Nedjalkov, 2007), I will postulate a meaning for *-an* that is consistent with both uses. In fact, my claim is simply that the core meaning of *-an* is transparent in (1b): *-an* creates a *cumulative plural event*, that is an event which consists of similar sub-events. As reciprocal constructions are also thought to contain cumulative plural events (Schein, 2001), this is what *-an* contributes in (1a) as well. Importantly, there is no reciprocal meaning component associated with the suffix—or any morpheme in Llogoori. To capture (1a), I will following a substantial tradition that attempts to explain the meaning of reciprocals in terms of the semantics for plural NPs (Langendoen, 1978; Sternefeld, 1998; Sauerland,

¹The reader should be aware that I have simplified the orthographic representation for expositional purposes. The examples should not be read as a complete phonetic transcription of Llogoori. In particular, I have left off the marking of tone, and have simplified some of the vowels. These are complex issues which are orthogonal issues to the present.

Abbreviations used in this paper:

1-17 : Noun classes

AC : Anticausative

FV : Final vowel

APPL : Applicative

PRES : Present

PASS : Passive

ANY : Plural Act

PROG : Progressive

HAB : Habitual

1998; Sternefeld, 1998; Beck, 2001). That is, the meaning of reciprocity seen in (1a) doesn't come from *-an*, it comes from the combination of a plural subject and a cumulative plural event. In the end, this paper illustrates the distinction between event-plurality and nominal plurality, and how the two interact in the creation of reciprocal meanings.

I will further illustrate that *-an* is restricted as to which events it can pluralize. Specifically, I will show that it can only pluralize events which involve a single argument, an idea which stems from the notion of “distinguishability” among the participants in an event (Langacker, 1976; Kemmer, 1993). In this discussion, I'll make the connection to a large literature on anticausative alternations (Croft, 1990; Haspelmath, 1993; Schäfer, 2008). The connection pays off in multiple ways, foremost in accounting for why *-an* and the Llogoori anticausative marker *-Vk* frequently co-occur. More germane to the present point, the restriction to intransitives also explains why *-an* appears in reciprocal constructions: since reciprocals can be classified as semantically intransitive constructions, as proposed generally in (Kemmer, 1993; Nedjalkov, 2007; Maslova, 2007), and for Bantu in particular (Dalrymple et al., 1998; Mchombo, 2004; Maslova, 2007), *-an* is pluralizing a single-argument event in the reciprocal meaning as well.

The paper is organized in the following way. First in section 1 I show that reciprocal sentences in Llogoori bear all the standard hallmarks of reciprocals cross-linguistically. They have (varieties of) weak and strong readings, can interact scopally, and have antecedence conditions. Then in section 2 I illustrate how *-an* is used to describe iterated/intensified events. I elaborate on two aspects of this

meaning. First, it is used to describe cumulative events. Second, it is used on events which maximally involve a single participant. In this section I make sure to differentiate *-an* from other ways to talk about events in Llogoori, including aspectual morphology. Finally, in section 3. I illustrate how the reciprocal meaning and the plural event meaning can be captured in a single analysis, by treating *-an* as contributing the plural event portion of the reciprocal meaning. Here I will adopt a long line of research that captures reciprocal meanings as a by-product of how we calculate plural NPs. In this way, *-an* doesn't actually come with any meaning component that signals reciprocity—in fact, there is no single thing that “means” reciprocal—but the sentence conspires to a reciprocal meaning anyway given the semantics of each piece.

1 Reciprocal use of *-an*

Descriptively, *-an* is used to encode a *reciprocal situation* in Llogoori, corresponding to English sentences containing *each other*.² (2a) is acceptable in a context where Sira shaved Imali and Imali shaved Sira. (2b) is acceptable in a context in which Sira pushes the rock to Imali, and Imali pushes the rock to Sira.

²Reciprocity is encoded distinctly from reflexivity.

(i) *Sira na Imali va-i-veg-i*

Sira and Imali 2-REFL-shave-FV

‘Sira and Imali shaved themselves.’ (Sira shaved Sira and Imali shaved Imali.)

I assume, like (Dalrymple et al., 1994), that the reflexive formation involves an incorporated pronominal element.

- (2) a. *Sira na Imali va-veg-an-i*
 Sira and Imali 2-shave-AN-FV
 ‘Sira and Imali shaved each other.’
- b. *Sira na Imali va-sund-an-il-i rigena*
 Sira and Imali 2-push-AN-APPL-FV 5rock
 ‘Sira and Imali pushed the rock to each other.’

As is typical of reciprocal markers, there is an antecedence condition such that the controller of *-an* must be a plural DP which precedes (c-commands) the marker.

- (3) **Sira a-ror-an-i (Imali)*
 Sira 1-see-AN-FV (Imali)

Moreover, like other reciprocals, there is a locality condition on the antecedent.

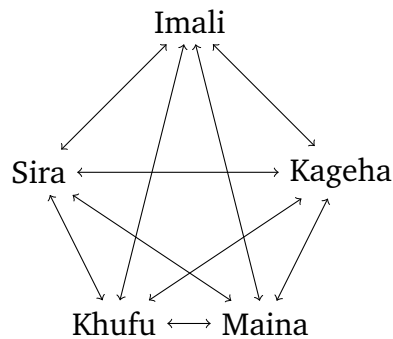
- (4) **Sira na Imali va-vor-i ndee Maina a-hol-an-i*
 Sira and Imali 2-say-FV that 1Maina 1-hit-AN-FV
 *‘Sira and Imali said that Maina hit each other.’

As documented for Chichewa by (Dalrymple et al., 1998), and English in (Fiengo and Lasnik, 1973; Langendoen, 1978; Heim et al., 1991), the notion of reciprocity has a number of different “flavors.” Reciprocity can be *strong*, in that the relation denoted by the predicate exists between every two members of a set. Or it can be *weak*, in which case it suffices that every member of the set is in a relation with at least one other member of the set. The following sections demonstrate that the broad variety of meanings is also found with *-an* in Llogoori.

1.1 Strong reciprocity

A relation is strongly reciprocal if every member of the set is in a relation with every other member of the set. (Strong reciprocity is not reflexive.)

- (5) *avaandu va-hol-an-a*
 2child 2-hit-AN-FV
 ‘The children hit each other.’



Verifying situation: *Imali, Sira, Kageha, Khufu and Maina are fighting. Imali hit Sira, Maina, Kageha, and Khufu; Sira hit Imali Kageha, Khufu, and Maina; Kageha hit Imali, Sira, Khufu, and Maina; Khufu hit Imali, Sira, Kageha, and Maina; and Maina hit Imali, Sira, Kageha, and Khufu. Thus, each child hit the four other children, and was hit by the other four other children.*

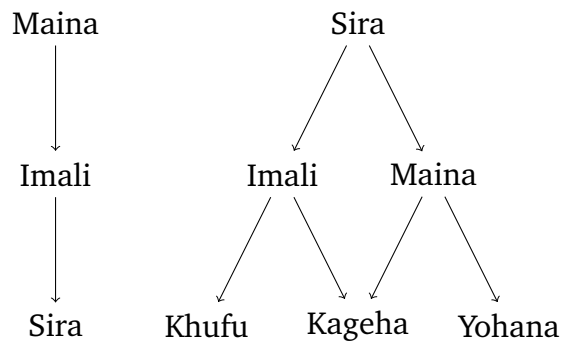
Strong reciprocity has the general description that for every ordered pair of distinct individuals in the domain of the transitive predicate, the relation denoted by the predicate holds.

1.2 Weak reciprocity

Reciprocity can also be *weak*, in which case it suffices that every member of the set be in a relationship with just one another member of the set, but it need not hold that every member is related to *every other* member. Here as well, there are various “flavors” of weak reciprocity.

- (6) *va-dungeleliz-an-a*
2-balance-AN-FV

‘They are balancing on each other.’



Verifying situation 1: *Sira, Imali, and Maina are acrobats. They have learned to balance on top of the other, and they’re doing it right now.*

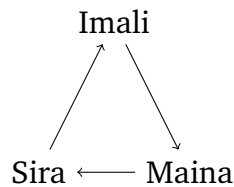
Verifying situation 2: *The cheerleading team consisting of Sira, Imali, Maina, Khufu, Kageha, and Yohana has formed a pyramid. They are balancing on each other.*

Weak reciprocity has the general description that for every individual x in the extension of the nominal subject, there exists a distinct individual y in the extension of the subject such that for some relation R , xRy , and for every individual x in

the extension of the subject, there exists a unique individual y in the extension of the subject such that yRx .

Another example of weak reciprocity is given in (7).

- (7) *avaanda va-hondolel-an-i*
 2child 2-stare-AN-FV
 ‘The children stared at each other.’



Verifying situation: *Sira, Imali, and Maina had a staring contest, but they couldn't agree on who should compete with who. Sira stared at Imali, Imali stared at Maina, and Maina stared at Sira.*

Thus in (7), every member of the set of children is both a “stare-er” and a “stare-ee,” but the relation is weak in that each child is only a stare-er/stare-ee for one other child, instead of for every child.

1.3 Intensional scope

Finally, the marker also exhibits a scopal ambiguity when embedded under an intensional predicate.

- (8) *Sira na Imali va-ganagan-a ndee va-ror-an-i*
 Sira and Imali 2-think-FV that 2-see-AN-FV
 “Sira and Imali think that they saw each other.”

- a. Sira thinks: “Imali and I saw each other.”
 Imali thinks: “Sira and I saw each other.” (think > rec)
- b. Sira thinks: “I saw Imali.”
 Imali thinks: “I saw Sira.” (rec > think)

In the (a) reading, *-an* is understood to scope under *think* (a *de dicto* reading), while in the (b) case, *-an* scopes outside of *think* (a *de re* reading).

1.4 Reciprocity and events

A sometimes overlooked property of reciprocal situations is that they must be perceived of as a *single* event (Kemmer, 1993; Schein, 1993). For example, consider the following context.

- (9) Last week, Imali stared at Sira. The following day, Sira stared at Imali.
- a. # *Sira na Imali va-hondolel-an-i*
 Sira and Imali 2-look-AN-FV
 ‘#Sira and Imali stared at each other.’

Although the relationship between the Sira and Imali qualifies as a (strongly) reciprocal relation, the sentences in Llogoori (and in English) are infelicitous in the context in (9) because there is no single event in which both Sira and Imali are staring at each other. Rather, there are two distinct events, one in which Sira stares at Imali, and another in which Imali stares at Sira. The scenario in (10) provides additional evidence.

- (10) On Tuesday, Sira kicked Imali. On Wednesday, Imali kicked Sira.

- a. # *Sira na Imali va-nagiz-an-i*
 Sira and Imali 2-kick-AN-FV
 ‘#Sira and Imali kicked each other.’

That is, reciprocal constructions are perceived as being a single event, which contains sub-events of the relation. This property of reciprocals in Llooori will prove important in the analysis of *-an* in section 3.

1.5 Frozen reciprocal forms

Most Bantu languages appear to contain certain “fossilized” reciprocals on lexically reciprocal verbs (Maslova, 2007, p. 342). Llooori is no different. Many of the verbs whose meaning is inherently reciprocal obligatorily appear with *-an* at the end of the verb.

<i>kwarembana</i>	to argue
<i>kwaagana</i>	to meet
<i>kuviting’ana</i>	to surround
<i>kukobana</i>	to fight, argue
<i>kuhulizana</i>	to agree
<i>kuherana</i>	to be equal
<i>kugoovana</i>	to fight with scratching

Table 1: Verbs likely bearing a fossilized reciprocal suffix. (*Ku-* is the class 15 infinitival prefix.)

The verbs in Table 3 can never appear without *-an* at the end. That is, they appear with *-an* even when used without a plural subject. In these cases, they can appear in a *discontinuous reciprocal* construction.

- (11) a. *Sira na Imali va-agan-i*
Sira and Imali 2-meet-FV
'Sira and Imali met.'
- b. *Sira y-agan-i na Imali*
Sira 1-meet-FV CONJ Imali
'Sira met with Imali.'
- (12) a. *avaandu va zishiri zinying'e va-hamban-a karono*
2person 2.of 10ethnicity 10many 2-unite-FV today
'People of many ethnicities are uniting today.'
- b. *Putin a-hamban-a na Trump*
Putin 1-unite-FV CONJ Trump
'Putin is uniting with Trump.'
- (13) a. *misaara ji-akurang'an-a*
4tree 4-equal-FV
'The trees are equal (in height).'
- b. *msaara yego saasa ga-akureng'an-a na msaara gura*
3tree 3this now 3-equal-FV CONJ 3tree 3that
'This tree is now equal to that tree.'

Many Bantu languages are documented as having a productive discontinuous reciprocal, as in Swahili.³

- (14) Swahili:
- a. *Juma na Halima wa-na-pend-ana*
Juma and Halima 3pl-PRES-love-AN
'Juma and Halima love each other.'

³This is one strategy for resolving clashes in noun class marking of coordinated subjects (Mchombo, 2004). In Llogoori, at least for the speakers questioned, conjunct resolution can be resolved by simply referencing the most local subject on the verb.

- b. *Juma a-na-pend-ana na Halima*
 Juma 3sg-PRE-love-AN CONJ Halima
 ‘Juma and Halima love each other.’

lit: ‘Juma loves each other with Halima.’

(Maslova, 2007, pp. 339, 344, citing Vitale)

However, Llogoori does not have a productive discontinuous reciprocal construction. It is confined to those verbs which are inherently reciprocal.

(15) Llogoori:

- a. * *Sira a-duy-an-a na Imali*
 Sira 1-hit-AN-FV CONJ Imali

As discontinuous reciprocity is not a productive strategy in Llogoori, and the reciprocal suffixes are likely lexicalized as part of the verb meaning on the verbs above, I will follow Maslova and treat these as simply fossilized forms. I will put them aside for the rest of this paper. That said, nothing I say below is contradicted by these data in any way.

In sum, the morpheme *-an* appears to behave like any other reciprocal marker, e.g., Chichewa’s cognate *-an* and English’s (arguably) bimorphemic *each other*. This is consistent with what has been reconstructed for Proto-Bantu: **-an* (Schadeburg, 2003; Nurse, 2008).⁴ However, I should be clear that the analysis offered below is only meant to cover Llogoori. I make no claims about other Bantu languages. Indeed, as far as I’m aware, the plural event use (to be discussed presently) has not been reported in other languages. So while *-an* has the function in Bantu

⁴In the literature this suffix is sometimes called the *associative* rather than reciprocal. My understanding is that the terminology is mainly due to, i) the phonological and semantic similarity to the general coordinator *na* and, ii) the fact that the discontinuous reciprocal construction is descriptively an associative construction, e.g., John talked with Mary ≈ John and Mary talked.

languages as the marker of reciprocity, it is likely that any one language may have further developed (or restricted) its meaning. Still, the data reported for its reciprocal use in Llogoori is consistent with what has been reported for other Bantu languages.

2 Plural events

The second part of this article will explore the second usage of *-an*. In addition to the reciprocal use, it also can be used to express a repeated event.

- (16) a. *Sira y-ashamul-i*
Sira 1-sneeze-FV
'Sira sneezed.'
- b. *Sira y-ashamul-an-i*
Sira 1-sneeze-AN-FV
'Sira sneezed repeatedly'
- (17) a. *kisaga ki-vun-ik-i*
3branch 3-break-AC-FV
'The branch broke.'
- b. *kisaga ki-vun-ik-an-i*
3branch 3-break-AC-AN-FV
'The branch broke in many places.'
- (18) a. *msaara gu-mer-i*
3tree 3-grow-FV
'The tree grew.'
- b. *msaara gu-mer-an-i*
3tree 3-grow-AN-FV

‘The tree grew very fast.’

Like with the reciprocal, the meaning associated with *-an* can vary. With some verbs, and in some contexts, the meaning is clearly a repeated, delimited event. In other contexts, the meaning is closer to an *intensive*. Table 2 illustrates the varying contribution of *-an*, depending on verb.

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

Table 2: Iterative/intensive uses of *-an*. (*Ku-* is the class 15 infinitival prefix.)

There are two properties of this use of *-an* that I will elaborate on. The first is that *-an* asserts that the event of the verb is a *cumulatively plural event*. The second is that it can only pluralize an event that has at most a single argument. Thus, in general, in its iterative function, *-an* only attaches to *intransitive verbs*—with major exceptions to be discussed presently.

2.1 Cumulative plurality

Starting with cumulative plural, in (16b), consider the following two contexts which involve multiple events of sneezing.

(19) Context 1: *Sira has a fit of sneezing.*

Context 2: *Over the course of the day, Sira sneezed multiple times.*

- a. *Sira y-ashamul-an-i*
 Sira 1-sneeze-AN-FV
 ‘Sira sneezed repeatedly.’

[Ok in context 1; # in context 2]

An event e is described as cumulatively plural if e is comprised of identical sub-events. Thus, Context 1, not Context 2, can be described using *-an*. This is because only in Context 1 do we perceive a single event which consists of sub-events of sneezing. In Context 2, there is no single event which we can pick out.

We see a similar distinction in (17b). Again, *-an* is only felicitous if there is a single event of multiple breakings.

(20) Context 1: *Sira stepped on a branch, and it broke into many pieces.*

Context 2: *Over the course of the day, many people stepped on a branch, breaking it into many pieces.*

- a. *kisaga ki-vun-ik-an-i*
 3branch 3-break-AC-AN-FV
 ‘The branch broke in many places.’

[Ok in context 1; # in context 2]

Again, as Sira stepping on a branch is a single event, we can felicitously use *-an* to describe Context 1, where the branch broke multiple times from this single event. And there is no single event we can pick out in Context 2.

The intensive reading can similarly be described as an instance of this cumulative event. A cumulative plural event of *kumera* ‘to grow’ is one in which there is

perceived to be a growing event, which is made up of sub-events of growing. Thus, (18) is used to describe “a tree in spring, like it’s growing in leaps and bounds.” It could also mean that a single stump has sprouted multiple new branches, and these branches are all now growing together into one tree. Similarly, an iterated cumulative event of *kumeeda*, ‘to increase’ would be described as an event that has multiple sub-events of increasing, or, “a steady increase.”

The following contexts illustrate the importance of a cumulative plural event. In (21), there is a plural subject which is *distributively* mapped to a plural event.

(21) *Sira, Imali, and Maina attended a townhall meeting. They mostly enjoyed themselves, except when the mayor spoke, at which point each of them got angry, but then calmed down again right after.*

a. *avaandu va-sin-ik-i*
2person 2-get.angry-AC-FV
‘The people got angry.’

b. # *avaandu va-sin-ik-an-i*
2person 2-get.angry-AC-AN-FV
‘The people got angry over and over.’

[Speaker’s comment: “They only got mad once? No this doesn’t work.”]

Similarly, in (22), there is no single event of “throwing a ball,” rather there are three distinct events of ball-throwing.

(22) *Six children are playing outside. Three of them have balls. The three with the balls throw their balls to one of the other three exactly one time.*

- a. *mipira ji-ras-ik-i*
 4ball 4-throw-AC-FV
 ‘The balls were thrown.’
- b. # *mipira ji-ras-ik-an-i*
 4ball 4-throw-AC-AN-FV
 ‘The balls were thrown over and over.’
 [Speaker’s comment: “This is ok if they’re juggling the balls.”]

Thus we see that the perception of a cumulative event is crucial. We also can observe that this is independent of whether the *subject* is plural or not. As the examples in (16b) and (17b) demonstrate, the multiple events cannot be derived from the fact that there are multiple participants.

The point is made clearer with an event-denoting subject. While syntactically singular, *-an* is licensed in (23a) because the trip consists of two sub-events: going to the Kisumu and going to Eldoret.

- (23) a. *lu-geend-a lu-a Kisumu na Eldoret lu-nyal-an-a*
 11-walk-FV 11-COMP 1Kisumu and 1Eldoret 11-be.possible-AN-FV
 ‘Going to Kisumu and Eldoret (on the same trip) is possible.’
 [Speaker’s comment: “This means that you’re doing it in one trip.”]
- b. *lu-geend-a lu-a Kisumu na Eldoret lu-nyal-a*
 11-walk-FV 11-COMP 1Kisumu and 1Eldoret 11-be.possible-AN-FV
 ‘Going to Kisumu and going to Eldoret is possible.’
 [Speaker’s comment: “Could be on the same trip or not.”]

Here (23a) asserts the meaning, “on the same trip.” This is because *-an* asserts a cumulative event. There is an event of going on a trip, and it consists of two smaller events. In contrast, in (23b) without *-an*, the sentence is ambiguous. It

could be taken to mean on the same trip, or it could also mean that both of these independent journeys are possible.

2.2 Single argument events

As stated earlier, *-an* has a second restriction as well: it can only pluralize events which involve a single argument. This is straightforwardly exemplified in the examples above where it attaches to intransitive verbs. These are by definition events which involve a single argument. Note that I make an important distinction between events and predicates. The former can have hypothetically any number of arguments associated with them. Predicates on the other hand are specified to occur as one-place, two-place, etc relations (*modulo* additional argument adding/subtracting processes, discussed below). Typically, there is a strict parallelism between the number of arguments associated with the lexical semantics of the verb and the number of arguments associated with the event. However, in a few well-known places, the relationship isn't homomorphic. I will elaborate on this below.

The generalization concerning the relationship between *-an* and the number of arguments becomes clear when we consider the difference between *-an* and the very similar suffix *-any*, which, like *-an* asserts that the event is a cumulative plural event. (Note that orthographic *ny* /ɲ/ is phonemically distinct from orthographic *n* /n/.)

- (24) a. *Sira a-han-i muliang'go*
 1Sira 1-close-FV 3door

- ‘Sira closed the door.’
- b. *Sira a-han-any-i muliang’go*
 1Sira 1-close-ANY-FV 3door
 ‘Sira closed the door repeatedly.’
- (25) a. *Sira a-hol-i iroli*
 1Sira 1-punch-FV 9truck
 ‘Sira punched the truck.’
- b. *Sira a-hol-any-i iroli*
 1Sira 1-punch-ANY-FV 9truck
 ‘Sira punched the truck over and over.’
- (26) a. *Sira a-vunany-i lusaga*
 1Sira 1-break-FV 15branch
 ‘Sira broke the branch.’
- b. *Sira a-vunany-any-i lusaga*
 1Sira 1-break-ANY-FV 15branch
 ‘Sira broke the branch into pieces.’

Like *-an*, *-any* similarly asserts a repeated, cumulative event. Thus, Sira’s repeated opening and closing of the door must be perceived as a single event mapped to a time. Similarly, in (25) and (26), there must be a perceived single event which has sub-events of truck-punching and stick-breaking. The difference between the two suffixes is that *-any* can only pluralize an event which includes two distinct arguments, in effect, transitive verbs. On the other hand, *-an* only pluralizes events with a single argument, in effect, intransitive verbs.

The examples in (27) and (28) are a minimal pair which illustrate this distinction. They differ in whether the sentence is derived via passivization or anti-

causativization.⁵

- (27) a. *mpira gu-ras-any-w-i* (na Sira)
 3ball 3-throw-ANY-PASS-FV by Sira
 ‘The ball was thrown over and over (by Sira)’
- b. * *mpira gu-ras-an-w-i* (na Sira)
 3ball 3-throw-AN-PASS-FV by Sira
- (28) a. *mpira gu-ras-ik-an-i* (*na Sira)
 3ball 3throw-AC-AN-FV
 ‘The ball was thrown over and over (by Sira)’
- b. * *mpira gu-ras-ik-any-i* (na Sira)
 3ball 3-throw-AC-ANY-FV by Sira

Descriptively, the passive and anticausative are both syntactically intransitive, but the passive construction is still *semantically* transitive: the Agent can be expressed in a *na*-phrase (or left implicit). The anticausative construction does not permit an implicit or explicit Agentive *na*-phrase. (See in particular the discussion in (Gluckman and Bowler, 2016) for Llogoori, and a cross-linguistic picture in (Schäfer, 2008), among many others.) Thus, (27) and (28) are a minimal pair which differ in terms of how many participants are associated with the event. In (27), the event includes two distinct participants, a Patient and an Agent. So passivization is one instance where the number of participants associated with the event is greater than the number of arguments associated with the predicate. For

⁵I do not have a good explanation for the relative ordering of *-any*, *-an*, the passive *-w*, and the anticausative *-Vk*. The pluractional *-any* must precede the passive and the plural event *-an* must follow the anticausative. Alternative orderings don’t work—nor do alternate orderings of the ungrammatical sentences above. I suspect that, rather than saying something deep about the difference between syntactic positions of *-an* and *-any*, this tells us that the anticausative marker and the passive occupy different positions in the syntax. This is an orthogonal issue, and so I will put it aside here.

(28), there is no Agent—implicit or explicit. It is a one-participant event as well as a one-place predicate. In this way *-any* is the counterpart of *-an*, used when the event has more than one participant.⁶ Thus, it will always appear with an external and internal argument.

Given that *-an* can only appear on intransitive verbs, it is now unsurprising that it frequently cooccurs with the anticausative marker. This is, indeed, the function of the anticausative: it indicates (or derives) a one-place predicate that precludes any Agent argument. This is what distinguishes it from the passive. Thus, it creates the very environment that *-an* needs: a semantic and syntactic one-place predicate. However, note that *-an*'s distribution is a bit wider than *-Vk*'s. *-An* can appear on (almost) any one-place predicate, but *-Vk* is restricted to events which are “internally caused” in the sense of (Croft, 1990; Haspelmath, 1993).⁷

⁶Note that the distinction doesn't appear to be one of unergative vs. unaccusative. All examples of *-any* I've found necessarily involve two arguments. Moreover, verbs like *shout*, and *run*, which are proto-typically unergative, pluralize using *-an*, not *-any*.

⁷I say “almost” because there are some predicates which pluralize differently. Some events can only be pluralized by suffixing *-agel* onto the end of the verb. This (arguably) consists of the progressive *-ag* and the applicative *-el*. In general, these verbs tend to all be semelfactives, e.g.,

- | | |
|--|---|
| (i) <i>Sira a-tum-i</i>
Sira 1-jump-FV

'Sira jumped.' | (iv) <i>mpira gu-idud-i</i>
3ball 3-bounce-FV

'The ball bounced.' |
| (ii) <i>Sira a-tum-agel-i</i>
Sira 1-jump-AGEL-FV

'Sira jumped over and over.' | (v) <i>mpira gu-idud-agel-i</i>
3ball 3-bounce-AGEL-FV

'The ball bounced repeatedly.' |
| (iii) * <i>Sira a-tum-an-i</i>
Sira 1-jump-AN-FV | (vi) * <i>mpira gu-idud-an-i</i>
3ball 3-bounce-AN-FV |

This deserves to be investigated more fully, but I will put it aside for now.

- (29) a. *Sira y-ashamul-an-i*
 1Sira 1-sneeze-AN-FV
 ‘Sira sneezed a lot.’
- b. *Sira a-vezagir-an-i*
 1Sira 1-belch-AN-FV
 ‘Sira belched a lot.’

Verbs like *kwishamula*, ‘to sneeze,’ and *kuvezagira*, ‘to belch’ are never marked with an anticausative suffix, despite being prototypically viewed as internally brought about. *-An* can also appear on prototypically unergative verbs like *kunagora*, ‘to run.’ Thus, while *-an* and *-Vk* have largely overlapping distributions, the pluralizer has a bit wider distribution.

We’ve seen what happens with valency decreasing processes, but we could also ask what happens with valency increasing processes. The relevant morpheme to look at here is the applicative *-il*. We find here that the iterated meaning must scope *under* the added argument. That is, in (30), there must be a particular person for whom Sira is sneezing/greeting.

- (30) a. *Sira y-ashiamul-an-il-a moondo*
 Sira 1-sneeze-AN-APPL-FV person
 ‘Sira is sneezing over and over for a particular person.’
 NOT: ‘Sira is sneezing for someone, over and over.’
- b. *Sira a-cheliz-an-el-a moondo*
 Sira 1-greet-AC-APPL-FV moondo
 ‘There’s a particular person for whom Sira is greeting over and over.’
 NOT: ‘Sira is greeting on behalf of someone, over and over.’

This is consistent with what we’ve already observed. *-An* is allowed to pluralize

the event before the applied argument is added. Note that the opposite ordering of suffixes would not work either. This is consistent with Baker's Mirror Principle concerning the mapping between syntax/semantics and morphological ordering. However, as there are noted mismatches between morphological ordering and structure, I don't find this to be a particular strong argument.

In this way, *-an* is seen to pluralize events which involve a single participant. Interestingly, reciprocals are often described as being single-participant events as well. Kemmer (1993) observes that the notion of "low participant distinguishability" (p. 213) is useful in describing certain valency patterns. Defined in terms of such "distinctness" between individuals⁸ a reciprocal (and a reflexive) situation is classified as semantically intransitive because, "the two participants are viewed essentially as a joint Initiator [=Agent] from which the overarching event expressed in the verb emanates" (Kemmer, 1993, p. 208). Thus, the appearance of *-an* in reciprocal situations is consistent with *-an*'s general distribution that it can only pluralize events which have one argument. In the case of the reciprocal, the one argument ends up filling both slots of a transitive predicate.

2.3 Frozen forms of the plural event use

It's worth noting that just like with the reciprocal use, there are a number of verbs which appear to include this plural event suffix, but which are ungrammatical without it. These verbs all at least conceptually include an cumulative plural event.

⁸See also (Langacker, 1976; Langacker and Munro, 1975) for related arguments as well as (Alexiadou et al., 2015) and the importance of *Disjoint Reference* in transitivity alternations.

<i>kusarana</i>	to spread out
<i>kuvigong'ana</i>	to spin
<i>kuvodongana</i>	to go around, twist, turn
<i>kung'ereng'ana</i>	to twinkle, sparkle
<i>kufulukana</i>	to work hurriedly, without a break
<i>kugalangatana</i>	to fall down and roll over and over
<i>kuguuguvana</i>	to rush from place to place (looking for food)
<i>kuhumbuzana</i>	to breath fast, gasp
<i>kukelemana</i>	to run to and fro with a spear, remembering a war hero
<i>kusalagana</i>	to be rare, be scattered, appear and disappear
<i>kuvining'ana</i>	to move from place to place aimlessly
<i>kudwaayana</i>	to eat in haste
<i>kuheelaana</i>	to breathe in and out

Table 3: Verbs likely bearing a fossilized plural event suffix. (*Ku-* is the class 15 infinitival prefix.)

Like the fossilized reciprocal forms, these verbs are ungrammatical without the *-an* portion at the end. I will treat these as lexicalized forms, and put them aside from here on. Again, nothing I say below is contradicted by these data in any way.

2.4 Distinguishing aspect and *-an*

Finally, I will briefly note that *-an* is distinct from other ways of pluralizing an event. In particular, *-an* isn't a marker of an aspectual category. This is straightforwardly seen in (31), where *-an* and different aspectual categories (progressive and habitual) co-occur.

- (31) a. *mpira gu-ras-ik-an-ag-a*
 3ball 3-throw-AC-AN-PROG-FV
 'The ball is being thrown a lot.'⁹

⁹I'll note that without *-ag* this sentence would have the same interpretation. This is because the

- b. *amaaze ga-mad-ek-an-anj-i*
 6water 6-increase-AC-AN-HAB-FV
 ‘The water kept increasing, over and over.’
- c. *amaaze ga-sund-uk-an-anj-i*
 6water 6-spill-AC-AN-HAB-FV
 ‘The water kept spilling over and over.’

Independently, the suffixes *-an* and aspect contribute very different meanings. Consider the following data where *rlala*, ‘once’ modifies the verb.

- (32) a. *mpira gu-ras-ik-an-i rlala*
 3ball 3-throw-AC-AN-FV once
 ‘The ball got thrown a lot once.’ (There were many throws).
- b. *mpira gu-ras-ik-ag-i rlala*
 6ball 6-throw-AC-PROG-FV once
 ‘The ball was being thrown once.’ (There was one throw.)

A similar state of affairs holds for the habitual suffix *-ang* (with allomorph *-anj*).

- (33) a. *kisala ki-vun-ik-ang-a*
 7stick 7-break-AC-HAB-FV
 ‘The stick breaks regularly.’
- b. *kisala ki-vun-ik-an-ang-a*
 7stick 7-break-AC-AN-HAB-FV
 ‘The stick breaks into many pieces regularly.’

Thus, *-an* and (viewpoint) aspect make very different contributions. They further occupy different slots in the verbal template, with *-an* preceding viewpoint aspect. I take this as sufficient evidence that they are distinct classes.

default for many verbs is a generic reading, which is compatible with a progressive interpretation. It’s not actually clear to me whether *-ag* contributes something other than this generic meaning.

2.5 Summary of iterative use

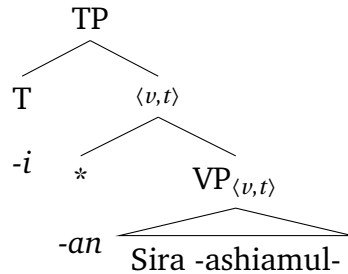
In addition to its reciprocal use, *-an* can create a cumulative plural event for certain events, namely, intransitive events. I'll note here that there is a rather large descriptive literature on polysemy of reciprocal markers. Of relevance is the fact that in many languages, the same morpheme(s) *is/are* are used for both reciprocity and iterativity/intensification (Nedjalkov, 2007; Frajzyngier and Curl, 1999). Such polysemy is observed in Mandarin Chinese, Hua (Papuan), and a number of Oceanic languages and Austronesian languages, among others. The fact that *-an* appears to serve a dual purpose in Llogoori is not entirely out of the ordinary. But despite this, beyond Davies's (2000) investigation of distributivity and reciprocity in Madurese, I am unaware of any formal attempts to make a connection between the two uses. I will attempt this in the next section.

3 Analysis

I assume that *-an*'s core meaning is that it takes a predicate of events, and creates a cumulative plural event. This is the common denominator between the iterative and reciprocal meanings: in both cases, there is a cumulative, plural, single-argument event. Informally, following the standard analysis of individual plurals in (Link, 1983), and extended considerably in (Schein, 1993; Lasersohn, 1995; Sternefeld, 1998; Rothstein, 2004), *E* is a cumulative plural event of some predicate *P* if *E* is an event of *P* and there are sub-events of *E* which are also *P*-events, and their mereological sum (\oplus) are sub-events of *E*. Thus, *-an* attaches to a predi-

cate of events, and returns a predicate of events. I will assume that it instantiates the *-operator, as in (34a). The relation $a \sqsubseteq b$ imposes an ordering on events such that a is sub-event of b . (v is the type of events, and t the type of truth.)¹⁰

(34) a.



b. $\llbracket(34a)\rrbracket = 1$ iff $\exists e, e', e''$ such that $e' \neq e''$ & $(e' \oplus e'') \sqsubseteq e$ & $\text{Sira-sneeze}(e) = \text{Sira-sneeze}(e') = \text{Sira-sneeze}(e'') = 1$

(34a) maps to true just in case there are multiple distinct events of Sira sneezing, and these events are perceived as sub-events of a larger sneezing event. That is, it's true in a context where Sira has a fit of sneezing. Thus, *-an* can attach to any VP which is a predicate of events and which has a single argument. (If the VP has two arguments, then *-any* is realized as the event pluralizer.)

But what about the reciprocal use? Here I'll follow a long line of research which has tried to explain reciprocity as primarily a function of how plural NPs/DPs are interpreted. Langendoen (1978); Heim et al. (1991); Sternefeld (1998); Sauerland (1998); Beck (2001) all start from the observation that in transitive sentences with plurals in both argument slots, there are “weak” and “strong” readings. De-

¹⁰I make no claims about the final vowel. For convenience I assume that it occupies T. Likewise, I will not bother with how subject agreement is computed. Head movement and phrasal movement create the correct morphological and syntactic ordering.

scriptively, one member of the subject group is paired with one or more members of the object group, and vice versa. (Here I adopt the common view that verbs are predicates of events, and that arguments are associated with those events.)

(35) Two boys read three books.

a. *Weak reading*

“Each boy is paired with a book and each book is paired with a boy and each pair is associated with an event in [[read]]”

b. *Strong reading*

“Each boy is paired with each book and each pair is associated with an event in [[read]]”

To get these different readings, the authors cited above invoke various methods for calculating pluralities of (quantified) NPs. The meaning of *two boys* and the meaning of *three boys*, applied to the predicate *read* in different ways derives the weak and strong readings. There is no extra machinery besides independently needed mechanisms for calculating pluralities, which can include LF-movement, different plural operators, distributivity operators, etc.

The cited authors observe that the same way of pairing subjects and objects is observed in reciprocals. One member of the subject is paired with one (or more) members of the object set, and vice versa.¹¹ There is an additional requirement of distinctness in the pairs, ruling out the fact that reciprocals in the languages under study are not also reflexive markers.¹²

¹¹As far as I'm aware, this observation was originally made in (Fiengo and Lasnik, 1973).

¹²Of course, in some languages, the reciprocal and reflexive are in fact the same marker (Nedjalkov, 2007; Murray, 2008), which can be taken as a piece of evidence in favor of this analysis.

(36) Three boys hit each other.

a. *Weak reciprocity*

“Each boy-as-a-hitter is paired with another boy-as-a-hittee, and each boy-as-a-hittee is paired with another boy-as-a-hitter, and each pair is associated with an event in [hit].”

b. *Strong reciprocity*

“Each boy-as-a-hitter is paired with each other boy-as-a-hittee, and each pair is associated with an event in [hit].”

There are various formal proposals for how to accomplish this (see the authors cited above, as well as (Murray, 2008) for a recent attempt in a different framework). In the end, it won't matter to me which proposal is correct. What's important here is that the independently needed semantics for plural nouns which accounts for (35) is the basis of the reciprocal meaning for (36). That is, to calculate reciprocity, we don't need additional machinery other than what is independently justified for plural nouns in general.

In a sense, *-an's* “function” is to signal that there is a cumulative plural event which has a single argument. The plural subject takes care of the rest.

(37) a. *avaana va-hol-an-i*
2-child 2-see-AN-FV
'The children hit each other.'

b. *Weak reading*

(i) each child-as-hitter is paired with another child-as-hittee, and each child-as-hittee is paired another child-as-hitter, and,

- (ii) each pair of children is associated with an event e_1, \dots, e_n , and
 - (iii) e_1, \dots, e_n are distinct sub-events of an event e , and,
 - (iv) e has one participant: the children, and
 - (v) $\{e, e_1, \dots, e_n\} \in \llbracket \text{hit} \rrbracket$
- c. *Strong reading*
- (i) each child is paired with every other child, and,
 - (ii) each pair of children is associated with an event e_1, \dots, e_n , and
 - (iii) e_1, \dots, e_n are distinct sub-events of an event e , and,
 - (iv) e has one participant: the children, and
 - (v) $\{e, e_1, \dots, e_n\} \in \llbracket \text{hit} \rrbracket$

First, it's important to see that the difference in the weak vs. strong reading is just in how the subject and object are paired. This part of the meaning, the first two lines (i) and (ii), is accomplished by how plural NPs are computed.¹³ The latter three lines are the contribution of *-an*, which makes sure that each event is a distinct event which is part of a larger event, the larger event involves a single participant, and they're all in the extension of the verb.

Second, observe that there is no individual piece of the sentence that “means” reciprocal. Because reciprocal sentences entail a cumulative plural event, and because reciprocal sentences are classified as having a single argument due to non-distinguishability between the subject and the object, the presence of *-an* is re-

¹³Note that there is a hidden distributivity operator in (ii). This comes with the NP plurality, as we need it in (35) as well: Each boy-book pair is associated with an event in the extension of $\llbracket \text{read} \rrbracket$.

quired. It doesn't mark the reciprocity directly, rather it marks the fact that there is a cumulative event, which is part of the meaning of every reciprocal sentence. Without *-an*, the sentence would simply be interpreted as having null object.

- (38) *avaana va-hol-i*
 2child 2-hit-FV
 'The children hit something.'

If another event pluralizer is chosen, say *-any*, then the interpretation is that there is a cumulative plural event of children hitting a null object.

- (39) *avaana va-hol-any-i*
 2child 2-hit-AN-FV
 'The children hit something repeatedly.'

This of course is where defining intransitivity in terms of disjointness becomes crucial. *-An* is felicitous in reciprocal situations because the subject and object are not disjoint, thus these are classified as "intransitive."

One issue for this analysis is that *-an* might be expected to be used to iterate a reflexive situation as well. But this isn't true.

- (40) a. *Sira y-i-vol-any-i*
 Sira 1-REFL-hit-ANY-FV
 'Sira hit himself over and over.'
- b. **Sira y-i-vol-an-i*
 Sira 1-REFL-hit-AN-FV

That said, there is evidence that in Bantu languages, reciprocals differ from reflexives in the the latter are treated as transitive sentences. This is the conclusion

of (Mchombo, 1993, 2004; Dalrymple et al., 1998) based on a number of observations, including, i) the fact that the reflexive affixes occupies the same position as the object markers (they are in complementary distribution); ii) object comparatives (i.e., sloppy readings) are available for reflexives but not reciprocals; iii) nominalizations, where *-an* can be included, but VP internal arguments generally cannot be. As observed in König and Gast (2008), despite Kemmer's (1993) claim that distinctness between subject and object can corresponds with general differences in transitivity, languages sometimes make individual choices about whether to treat the reciprocal or reflexive (or neither) as a transitive/intransitive construction. This of course leaves open the question as to what differentiates reciprocals and reflexives in Bantu. I'll leave this for future work.

4 Conclusion

I have shown above that a unified analysis for the suffix *-an* as a reciprocal marker and a cumulative plural event marker can be given. I have proposed that it is simply the latter. It's meaning is that of a cumulative event pluralizer, which only attaches to verbs which describe an event involving a single participant. Independently proposed mechanisms for calculating plural NPs/DPs can derive the reciprocal meaning. In this analysis, there is no single morpheme that houses the reciprocal meaning, rather, reciprocity is the result of combining various pluralizers, an event pluralizer and a nominal pluralizer. This is in line with other theories of reciprocity, which have sought to reduce reciprocal meanings to a compositional

semantics (Heim et al., 1991). Llogoori demonstrates succinctly how this can be accomplished. Moreover, the data are in line with the cross-linguistic polysemy between event pluralizers/iteratives/intensives and reciprocity Nedjalkov (2007). It remains to be seen the variability of *-an* in related Bantu languages. Finally, Llogoori demonstrates that variability of expressions of reciprocal meanings cross-linguistically. Reciprocity involves a number of interacting semantic pieces, and languages may choose to grammaticalize certain aspects of the meaning.

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