# Reciprocals and Passives in Ndebele

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This paper examines reciprocal constructions in Zimbabwean Ndebele, marked by the suffix *-an*. We argue that these reciprocals are verbal, not pronominal, and that *-an* functions as a valency-reducing verbal extension. Adopting and extending Bruening's (2004, 2006) analysis, we propose that *-an* is the exponent of a special type of agentive Voice, (Voice$_{Rec}$), which introduces the Agent in its specifier and relates it reciprocally with a lower argument. We further argue that this head bears an obligatory DP-licensing feature $[*D*]_{OL}$, giving rise to the requirement that reciprocal constructions must always contain a DP argument. We end with a crosslinguistic connection between Voice$_{Rec}$ and passives in certain languages.

## 1 Introduction

Two types of reciprocals can be found across languages: pronominal and verbal ones (see Siloni 2008; Nishigauchi 1992; Mchombo 1993; Tatsumi 2017; Bruening 2004). Pronominal reciprocals have a reciprocal anaphor like *each other* in English in (1). Verbal reciprocals lack a reciprocal anaphor. Instead, the reciprocal meaning is encoded through valency-reducing morphology e.g., the morpheme *-aw* in Japanese in (2).

(1)   They helped *each other*.

(2)   [John-to Mary]-ga   home-‖at‖-ta.                    *Japanese*
       John-and Mary-NOM praise-‖REC‖-PST

'John and Mary praised each other.'                    (Tatsumi 2017: 536)

In this paper, we examine the syntactic properties of reciprocals in Zimbabwean Ndebele (S44) in (3), which contain the reciprocal extension, the suffix -*an*.[1]

(3)  Abantwana ba-ya-nced-| an |-a.
     2.child    2.sbj-prs-help-| rec |-fv
     'The children are helping each other.'

In Section 2, we demonstrate that Ndebele reciprocals are verbal: there is no evidence for an overt or covert reciprocal DP. We argue that reciprocity in Ndebele is valency-reducing in that it turns a transitive predicate into an intransitive one. In Section 3, we follow Breuning's (2004, 2006) analysis of verbal reciprocals and suggest that Ndebele reciprocals include a reciprocal agentive Voice, namely Voice$_{Rec}$, that i) selects for an unsaturated VP of type <e,<st>> and ii) merges a DP in its specifier. Crucially, this allows us to capture the observation that reciprocity relations in Ndebele can hold only between the Agent and a missing argument semantically introduced by the head immediately below Voice (e.g. V or Appl). In Section 4, we investigate the interaction between passives and reciprocals, which, interestingly, can co-occur only with ditransitive predicates. In Section 5, we argue that Ndebele reciprocals are thus subject to a transitivity restriction: they require the presence of at least one DP after reciprocalization. To capture this restriction, we propose that Voice$_{Rec}$ in Ndebele bears a [∗D∗] feature, which must be checked by a DP in its probing domain. In Section 6, we suggest that the transitivity restriction observed in Ndebele is similar to the restriction on passives in languages like English, which also require at least one DP after passivization (i.e. they don't allow impersonal passives). Section 7 concludes.

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[1]All data come from a single speaker to ensure a coherent system for analysis. While some interspeaker variation exists – especially regarding the possible co-occurrence of the passive and reciprocal extensions – we do not combine judgments from different speakers in order to maintain internal consistency in the dataset. Tone is not marked in the examples, as it does not bear on the patterns and generalization under discussion. All Ndebele data are given using standard orthography.

## 2 Ndebele reciprocals are verbal

We provide arguments for treating Ndebele reciprocals as verbal. First, the reciprocal morpheme *-an* in Ndebele is part of the extended verb stem. (4) provides the verbal template in Ndebele. The subject agreement prefix precedes the tense prefix. The object agreement prefix follows the tense. Verbal extensions e.g., the causative or applicative, appear after the verbal root.[2]

(4)   SBJ-TENSE-(OBJ)-verbal root-CAUS/APPL/**REC**/PASS-FINAL VOWEL

The REC morpheme *-an*[3] is a verbal extension that occurs after the verbal root like other extensions e.g., the causative *-is* or the applicative *-el* (Khumalo 2007: 79; Sibanda 2004; Khumalo 2014). This is illustrated in (5).

(5)   Abantwana ba-ya-zi-theng-is-el-⟨ an ⟩-a           izimpahla.
       2.child     2SBJ-PRS-8OBJ-buy-CAUS-APPL-⟨ REC ⟩-FV 8.clothes
       'The children are selling the clothes to each other'     (Khumalo 2014: 144)

Second, there is no reciprocal DP equivalent to *each other* in this construction. Instead, reciprocity is expressed through verbal morphology, the suffix *-an*, which exhibits the properties of a valency-reducing morpheme. One could hypothesize that these reciprocals do have a projected reciprocal DP anaphor in the structure, but this DP is null. However, this is not the case. Null pronouns in the language trigger object agreement e.g., the first person null object triggers agreement on the verb expressed through the object marker *ngi-* in (6). In contrast, object agreement cannot coreference the reciprocal argument in (7). Nei-

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[2]While Ndebele extensions exhibit a strict order, REC can sometimes follow PASS, deviating from the template. As reported by Sibanda 2004: 66, this occurs when the semantic subject is locative or a semantically empty expletive (i). In this paper, we set locative subjects aside and focus on cases in which the order of extensions is strictly REC«PASS. We leave examples like (i) for further research.

(i)   (Pandle) kw-a-sik-w-an-a          / kw-a-sik-an-w-a.
       outside   15/17-PST-stab-PASS-REC-FV  15/17-PST-stab-REC-PASS-FV
       '(Outside) there was stabbing of each other.'

[3]Note that *-an* changes to *-en* in the context of the Recent Past final suffix.

(i)   Abantu  ba-nced-⟨ en ⟩-e.            (ii)   Abantu  b-a-nced-⟨ an ⟩-a.
       2.person 2SBJ-help-REC-FV.RPST              2.person 2SBJ-DPST-help-REC-FV
       'People helped each other.' (recent past)    'People helped each other.' (distant past)

ther the object marker *ba-*, typically triggered by class 2 nouns like *abantu* 'people', nor the default marker *ku-* is possible.[4] We take this contrast to suggest that Ndebele reciprocals lack a null reciprocal anaphor, and thus (6)-(7) pattern like intransitive constructions.

(6)  Abantwana ba-ya-**ngi**-nced-a.
     2.child     2.SBJ-PRS-**1SG.OBJ**-help-FV

     'The children are helping me.'

(7)  Abantwana ba-ya-**(\*ba/\*ku)**-nced-[an]-a.
     2.child     2.SBJ-PRS-**2.OBJ/15.OBJ**-help-[REC]-FV

     'The children are helping each other.'

Furthermore, the REC suffix also cannot be treated as the object marker linearized to the right of the verb root. This is supported by the contrast in (8-9). Ndebele allows for a thematic subject to stay *in situ*. When the subject is in its original position, which we take to be Spec,VoiceP (see Section 3.1), the object marker is ungrammatical (8). Object agreement is possible only when the subject moves to Spec,TP as in (6). (9) shows that the REC suffix is grammatical when the subject is in Spec,VoiceP, which indicates that *-an* is not an object marker.

(8)  \*Ku-[ngi]-nced-e                   abantwana.
     15.SBJ-**1SG.OBJ**-help-FV.RPST 2.child

     'The children helped me.'

(9)  Ku-nced-[en]-e            abantwana.
     15.SBJ-help-[REC]-FV.RPST 2.child

     'The children helped each other.'

Another reason to think that *-an* is not an object marker comes from the fact that it can co-occur with an object marker in the same verb (10) (Khumalo 2003). This is notable because Ndebele does not allow stacking object markers (EXAMPLE!). Thus, the grammaticality of *-an* in (10) again suggests that *-an* is not an object marker.

(10)  Abantwana ba-ya-zi-theng-is-el-[an]-a            izimpahla.
      2.child     2SBJ-PRS-8.OBJ-buy-CAUS-APPL-[REC]-FV 8.clothes

      'The children are selling the clothes to each other'     (Khumalo 2014: 144)

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[4]For similar facts in Chichewa see Mchombo 2004: 83.

Another way in which Ndebele reciprocal constructions pattern like verbal reciprocals across languages is in showing restrictions on possible reciprocity relations (see e.g., Bruening 2006 for these restrictions in Japanese). In contrast, pronominal reciprocals allow a number of reciprocity relations among arguments. For instance, let's take English. Three logically possible relations with ditransitives like *give* can be observed. The first situation would be as in ① where the Agent and the indirect object are interpreted reciprocally. The second scenario would be as in ② where the Agent is reciprocal with the direct object. Lastly, it is also possible for the indirect object to be reciprocal with the direct object, as in ③. These three reciprocity relations are illustrated in (11).

① **We$_i$** gave *each other$_i$* children.

② **We$_i$** gave mothers *each other$_i$*.

③ We gave **mothers$_i$** *each other$_i$*.

(11)



On the other hand, Ndebele allows only the first option, where the subject and the indirect object are interpreted reciprocally (12). The subject cannot be reciprocal with the direct object, which is lower in the structure than the indirect object. Furthermore, it is not possible for the indirect object to be reciprocal with the direct object.[5]

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[5]To express a type of meaning where mothers revealed each other, our consultant uses an embedded causative construction shown in (i). In this instance, the DP *mothers* is the subject of the embedded clause introduced by the complementizer *ukuthi* rather than the object of the matrix clause.

(i)  umfana w-a-yenz-a      ukuthi omama    ba-za-ambul-el-an-a.
     1.boy   1.SBJ-DPST-do-FV COMP   2.mother 2.SBJ-FUT-reveal-CAUS-APPL-FV

(12) Abantwana ba-mbul-el-an-a        omama.
2.child    2.SBJ-reveal-APPL-REC-FV 2.mother
① '**Children** revealed mothers$_{DO}$ to *each other*$_{IO}$.'✓
② '**Children** revealed *each other*$_{DO}$ to mothers$_{IO}$'✗
③ 'Children revealed **mothers**$_{DO}$ to *each other*$_{IO}$.'✗

The pattern in (12) suggests that Ndebele reciprocals are subject to two restrictions. First, the reciprocal relation must include the Agent i.e., the highest argument in the structure. The second requirement is that the other participant of the recirpocal relation must be the argument *immediately* below the agent. We will show in Section 3 how these generalizations follow from the analysis advocated here.

Lastly, languages with pronominal reciprocals have been reported to allow both sloppy and strict interpretation under ellipsis. This is possible in Greek examples like (13) with the reciprocal anaphor (Paparounas 2023).

(13) Greek (adapted from Paparounas 2023: 80)

... i        ðikastes    laðonun **o**     **enas**    **ton**
... the.NOM.PL judge.NOM.PL oil.3.PL the.NOM one.NOM the.ACC
**alo**      pio  sixna apo tus   astinomikus.
other.ACC more often from the.PL police.officer.PL

*Sloppy:* ✓ '...the judges bribe each other more often than the policemen bribe each other.'
*Strict:* ✓ '... the judges bribe each other more often than the policemen bribe the judges.'

Ndebele reciprocals allow only a sloppy reading, which is a type of restriction that is typical of verbal reciprocals across various languages (Mchombo 1993; Bruening 2004; 2006; Keenan & Razafimamonjy 2004).

(14) Abazingeli b-a-nced-‎‎ an ‎-a        okwedlula      abagoli.
2.hunter   2.SBJ-DPST-help-‎ REC ‎-FV that.which.is.beyond 2.fisherman
'Hunters helped each other more than fishermen.'

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'The boy made the mothers$_i$ reveal each other$_i$.'

*Sloppy:* ✓ 'Hunters helped each other more than fishermen helped each other.'

*Strict:* ✗ 'Hunters helped each other more than fishermen helped hunters.'

To sum up, Ndebele reciprocal constructions behave like verbal reciprocals in a number of ways. They do not have a null reciprocal anaphor as demonstrated by the lack of object agreement. We have argued that *-an* itself is not an object marker because it is compatible with an *in-situ* subject, which cannot co-occur with canonical object markers. Furthermore, Ndebele does not allow double object markers, but *-an* can co-occur with one. Instead, *-an* patterns like a verbal extension. Specifically, it is a valency-reducing morpheme: when combined with a transitive predicate like 'help', it turns it into an intransitive predicate with one overt argument. Lastly, reciprocal relations in Ndebele are restricted, as is common to verbal reciprocals: the reciprocal relation can only hold between the Agent and the argument immediately below it.

# 3 Bruening's (2004, 2006) analysis of verbal reciprocals

In this section, we summarize Bruening's (2004, 2006) analysis of verbal reciprocals and show how it accounts for Ndebele facts.
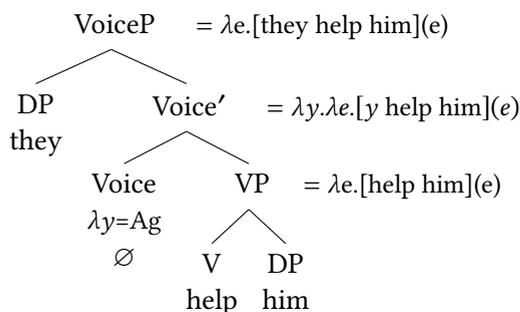
## 3.1 The reciprocal *-an* is the head of a reciprocal agentive Voice

To clearly illustrate Bruening's proposal, we will compare the transitive construction in (15) with the verbal reciprocal in (16). (15) has an agentive Voice in the sense of Kratzer 1996. This head introduces an external argument $\theta$-role and merges a DP in its specifier. This Voice combines with a saturated VP (type <s,t>) that has a projected Theme argument. When it comes to verbal reciprocals, Bruening (2004; 2006) proposes that they also have an agentive Voice, which we will label Voice$_{Rec}$. This Voice introduces an external argument $\theta$-role and has a DP specifier (in active clauses). The head of this projection is realized by a reciprocal morpheme. Thus, the reciprocal suffix *-an* in Ndebele is the head of Voice$_{Rec}$P on this account. Bruening further argues that Voice$_{Rec}$ takes an unsaturated VP (type <e,<s,t>)[6], which lacks a projected Theme argument, though the Theme $\theta$-role is still present. Under this type of analysis, verbal reciprocals like (16) are
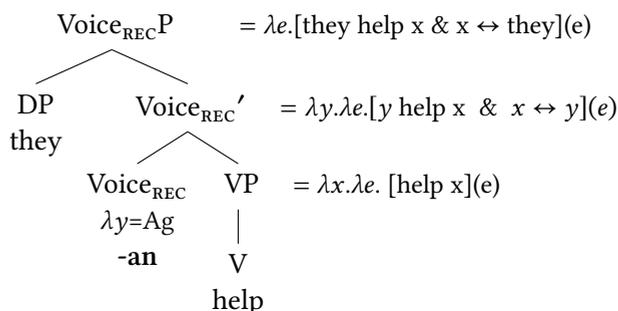
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[6]The denonations in (15-16) are simplified from Bruening's original proposal, but the types are crucially preserved. We refer the reader to Bruening's original paper for a detailed semantics of the reciprocal relation, which we abbreviate here using the "↔" symbol.

syntactically unergative – their sole DP argument is an Agent.[7] There is no binding relation on this account.

(15) **Agentive Voice**: 'They helped him.'

$$\text{VoiceP} \quad = \lambda e.[\text{they help him}](e)$$

DP    Voice′    $= \lambda y.\lambda e.[y \text{ help him}](e)$
they

     Voice      VP    $= \lambda e.[\text{help him}](e)$
     $\lambda y = \text{Ag}$
     ∅    V    DP
       help   him

(16) **Recip. Voice**: 'They helped each other'

$$\text{Voice}_{\text{REC}}\text{P} \quad = \lambda e.[\text{they help x \& x} \leftrightarrow \text{they}](e)$$

DP    $\text{Voice}_{\text{REC}}$′    $= \lambda y.\lambda e.[y \text{ help x \& } x \leftrightarrow y](e)$
they

     $\text{Voice}_{\text{REC}}$    VP    $= \lambda x.\lambda e. [\text{help x}](e)$
     $\lambda y = \text{Ag}$
     **-an**    V
         help

## 3.2 Deriving the core facts from Voice~Rec~

Having introduced Bruening's analysis of verbal reciprocals, we now demonstrate how this analysis derives the core facts. First, observe that *-an* cannot be

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[7]One analytical possibility is that the syntax of reciprocals is unaccusative—i.e., the overt DP is generated in the Theme position rather than the Agent position. We are not aware of such analyses for verbal reciprocals, but it is worth noting this possibility, especially given that similar proposals have been made in the literature on reflexives, where there is ongoing debate as to whether they have unaccusative or unergative syntax (see Siloni 2008 for an overview). It is worth noting that the unaccusative analysis does not straightforwardly extend to reciprocals in ditransitives, where the reciprocal relation does not involve the verb's complement but rather the Agent and the indirect object (see example (12)). The reciprocal relation invariably involves the Agent, not the Theme, as predicted by the unergative analysis. A full investigation of this issue is left for future work.

added to intransitive predicates, both unergatives or unaccusatives, as illustrated in (17).[8]

(17)  a.  Abantu  b-a-f-(*an)-a.
          2.person 2.SBJ-DPST-die-REC-FV
          'People died.'

     b.  Abantu  b-a-gid-(*an)-a.
          2.person 2.SBJ-DPST-dance-REC-FV
          'People danced.'

The unaccusative VP in (17a) has a projected internal argument *abantu* 'people', meaning that this VP is saturated (type <s,t>). Recall that Voice$_{Rec}$ requires an unsaturated VP of type <e,<st>>. (17a) is ungrammatical because the unaccusative VP is not of the right type for Voice$_{Rec}$. (17b) cannot be reciprocalized because an unergative V does not introduce an argument, which means that the VP is of type <s,t> by itself, and therefore also incompatible with Voice$_{Rec}$.

Second, recall that there is no object agreement coreferencing the missing argument of the reciprocal relation (see (7)). Under the current analysis, this argument is not projected in the structure and therefore it cannot control agreement. Thus, this analysis explains the lack of object agreement in (7).

Third, Ndebele reciprocals allow only a sloppy reading under ellipsis (see (14)). Assuming that the strict reading in English arises via a particular interpretation of the DP *each other*, the lack of this reading is expected in Ndebele, where no counterpart of *each other* is projected. Instead, the reciprocity is due to the semantics of Voice$_{Rec}$, which relates the Agent with a missing argument *of the same clause*. Ellipsis preserves this denotation of Voice$_{Rec}$, giving rise to sloppy identity.

Lastly, Ndebele reciprocals exhibit restricted reciprocity relations ((12), repeated in (18)). The relation must involve the Agent (introduced in Spec,Voice$_{Rec}$)

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[8]In order to have a reciprocal meaning with verbs like *dance*, the applicative extension *-el* needs to be added first as in (i). In this case, the reciprocity relation holds between the Agent (projected in Spec,VoiceP) and the applied argument (not projected). Reciprocal Voice in this case combines with an unsaturated ApplP.

(i)  Abantwana b-a-gid-el-an-a.
     2.child    2.SBJ-DPST-dance-APPL-REC-FV
     'The children danced for each other.'

and the semantic argument immediate below the Agent. This is captured by the current analysis, where Voice$_{Rec}$ selects for an XP with an unsaturated individual variable. In (18), it takes an unsaturated ApplP and relates the Agent reciprocally with Appl's semantic argument, namely the Benefactive (19). The reciprocal relation in ② is impossible because including the Theme in it would require the VP to be unsaturated. However, Appl only composes with saturated VPs (type <s,t>), leading to a type clash. Finally, a reciprocal relation between the two objects, as in ③, cannot be established simply because neither of these arguments is the Agent, and reciprocity in Ndebele is inherently tied to Agenthood.

(18)  Abantwana b-a-mbul-el-an-a                  omama.
      2.child     2.SBJ-DPST-reveal-APPL-REC-FV 2.mother
      ① '**Children** revealed mothers$_{DO}$ to *each other*$_{IO}$.'✓
      ② '**Children** revealed *each other*$_{DO}$ to mothers$_{IO}$'✗
      ③ 'Children revealed **mothers$_{DO}$** to *each other*$_{IO}$.'✗

(19)



Voice$_{REC}$P          $= \lambda e.\lambda y.[y$ reveal mothers to x  &  $x \leftrightarrow y](e)$

DP   Voice$_{REC}'$      $= \lambda e.\lambda y.[y$ reveal mothers to x  &  $x \leftrightarrow y](e)$
they

Voice$_{REC}$   ApplP   $= \lambda e.\lambda x.$ [reveal mothers to x](e)
$\lambda y$
**-an**           Appl'   $= \lambda e.\lambda x.$ [reveal mothers to x](e)

Appl     VP   $= \lambda e.$ [reveal mothers](e)
$\lambda x$
-el    V   DP
       mothers

To sum up, following Bruening's analysis of verbal reciprocals, we have proposed that Ndebele reciprocals are formed with Voice$_{Rec}$P – a type of agentive Voice that has a specifier and selects for an unsaturated XP (VP as in (16) or ApplP as in (18)), and creates a semantic reciprocity relation between the Agent and the missing argument.

# 4 Interactions between reciprocals and passives

In this section we investigate the co-occurrence of passive and reciprocal morphology. The two extensions can independently attach to a verb:

(20)  a.  Umama  u-nced–⟨w⟩-e      ng-umntwana.
          1.mother 1.SBJ-help-⟨PASS⟩-FV by-1.child
          'The mother was helped by a child.'          *passive of transitives*

      b.  Abantwana ba-ya-nced-⟨an⟩-a.
          2.child    2.SBJ-PRS-help-⟨REC⟩-FV
          'The children are helping each other.'       *reciprocal of transitive*

However, stacking them on a monotransitive yields ungrammaticality:

(21)  ??Kw-a-nced-⟨an⟩-⟨w⟩-a      ng-abantwana.
        15SBJ-DPST-help-⟨REC⟩-⟨PASS⟩-FV by-2.child
        'It was helped each other by the children.'          *reciprocal + passive*

One possible hypothesis explaining (21) is that the passive and the reciprocal extensions realize the same functional head (e.g. Voice), and therefore only one of them can occur in a given sentence. This, however, predicts that REC and PASS should *never* co-occur, incorrectly ruling out (22).

(22)  Izipho z-a-nik-⟨an⟩-⟨w⟩-a         ng-abantwana.          (c.f. (21))
       10.gift 10SBJ-DPST-give-⟨REC⟩-⟨PASS⟩-FV by-2.child
       'The gifts were given to each other by children.'       *reciprocal + passive*

Since the two extensions can co-occur in ditransitives, they must realize separate functional heads (with PASS projected higher than REC, assuming the Mirror Principle (Baker 1985)).

Another way of explaining the ungrammaticality in (21) would be via a ban on passivizing intransitives. If the reciprocal detransitivizes the verb ('help$_{(Tr)}$' → 'help-each-other$_{(Intr)}$'), then the passive morpheme would be attaching to an intransitive verb here. However, Ndebele does allow passivization of intransitives (specifically unergatives), yielding impersonal passives, such as (23):

(23)  Kw-a-gid-⟨w⟩-a         ng-abantwana.
       15.SBJ-DPST-dance-⟨PASS⟩-FV by-2.child
       'It was danced by the children.'                *impersonal passive*

The impossibility of combining REC and PASS in monotransitives is therefore not directly related to reducing valency. In the next section, we show how our adaptation of Bruening's analysis predicts that REC and PASS can co-occur only in ditransitives, while remaining compatible with the existence of impersonal passives in this language.

## 5 Deriving the ditransitive restriction on PASS+REC

We observed in the previous section that REC and PASS can co-occur only in ditransitive sentences in Ndebele. In this section, we propose that this restriction is syntactic in nature and relates to DP licensing. More specifically, we propose that Reciprocal Voice is an obligatory DP licensor, and consequently, requires a DP in its c-command domain. This requirement, in combination with passive syntax, yields the result that only ditransitive verbs permit the co-occurrence of REC and PASS.

### 5.1 Obligatory Licensing by Voice$_{Rec}$

We assume Bruening's (Bruening 2004; 2006) analysis of the syntax and semantics of verbal reciprocals, discussed in Section 3. Recall that this analysis correctly derives the core properties of Ndebele reciprocals presented there. One property that does not follow straightforwardly from Bruening's account is the generalization that only ditransitives allow PASS and REC to co-occur. We propose that this follows from an additional property of Reciprocal Voice: this head bears a [∗D∗] feature, which must be checked by a DP. (We adopt the [∗D∗] notation from Müller 2010 for features triggering an Agree relation.) Crucially, this [∗D∗] feature cannot remain unchecked. In light of existing evidence that at least some probes (e.g., those involved in $\phi$-agreement) need not succeed in finding a goal (see Preminger 2014 and later work), one might expect that a failure to check [∗D∗] could be tolerated by the derivation. We argue, however, that the relation between [∗D∗] on Voice$_{REC}$ and a DP is an obligatory one. We refer to this type of relation as Obligatory Licensing:

(24)   *Obligatory Licensing*
       A feature [∗F∗]$_{OL}$ must enter in an Agree relation with a matching goal F

in order for the derivation to proceed.[9,10]

Our proposal is that Reciprocal Voice in Ndebele has $[*D*]_{OL}$, which requires a DP in the probing domain of $Voice_{Rec}$.

Let us see how this proposal derives the core examples of reciprocal sentences in Ndebele, without passive voice for now. In (25), the ditransitive verb 'give' has been reciprocalized. As a result, the Benefactive DP is not projected and is interpreted reciprocally with the Agent. As shown in the derivation of this example, the $[*D*]_{OL}$ feature on Reciprocal Voice probes in its c-command domain as soon as it is merged and finds the direct object. This satisfies the Obligatory Licensing, and the derivation can proceed.

(25)  Abantwana  b-a-nik-| an |-a               izipho.
      2.child       2.SBJ-DPST-give-| REC |-FV 10.gift

      'The children gave each other gifts.'

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[9]When applied to D-checking, Obligatory Licensing resembles the Inverse Case Filter (Bošković 1997). We prefer to stay agnostic as to whether the facts discussed here should be classified as case, given much controversy around case in Bantu languages, including Ndebele (see Pietraszko 2021 and references cited there). We also do not wish to commit to all licensing being obligatory, as the adoption of the Inverse Case Filter would do. For the time being, we speculate that both fallible and infallible feature checking exist, and we mark the latter with the OL subscript.

[10]This DP licensing feature is distinct from the feature that's responsible for projecting a specifier (which could be notated in a number of ways, e.g. [EPP], [·D·], or [Sel:DP]). We do not include this feature in our trees.
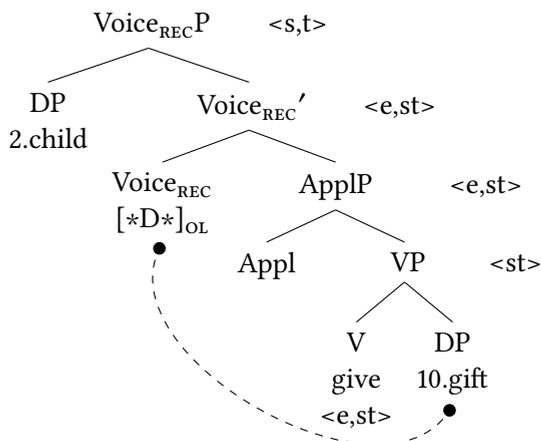
Turning now to monotransitives, recall that they have unergative syntax when combined with Voice$_{Rec}$. This means that there is no DP in the c-command domain of Voice$_{Rec}$ that could check its $[*D*]_{OL}$ feature. However, assuming cyclic Agree (Béjar & Rezac 2009), the probe projects to Voice$_{Rec}$′ and enters in an Agree relation with its specifier, i.e. the Agent. This derivation is illustrated with the verb 'help' in (26).

(26)    Abantwana ba-ya-nced-⟦an⟧-a.
        2.child      2.SBJ-PRS-help-⟦REC⟧-FV

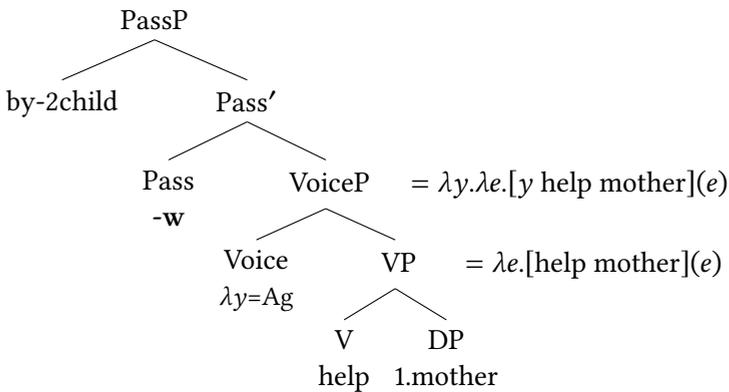        'The children are helping each other.'
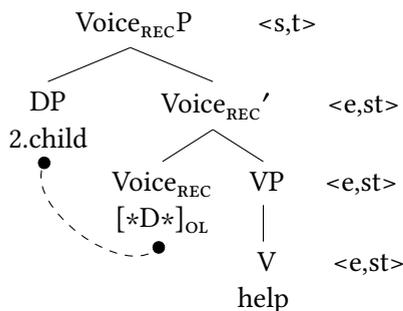


We have seen that, in active voice, the $[*D*]_{OL}$ feature of Voice$_{Rec}$ is checked, whether the verb is monotransitive or ditransitive. The next section considers

passive sentences, in which a contrast arises between monotransitives and ditransitives.

## 5.2 Combining reciprocals and passives

Building on previous work, we take passive voice to arise from two functional projections: an agentive VoiceP and a higher PassP (Embick 2004; Bruening 2006; 2013; Schäfer 2017; Wurmbrand et al. 2021). We treat the passive suffix in Ndebele (*-w*) as the realization of Pass. An example derivation of a passive sentence is given in (27) below.
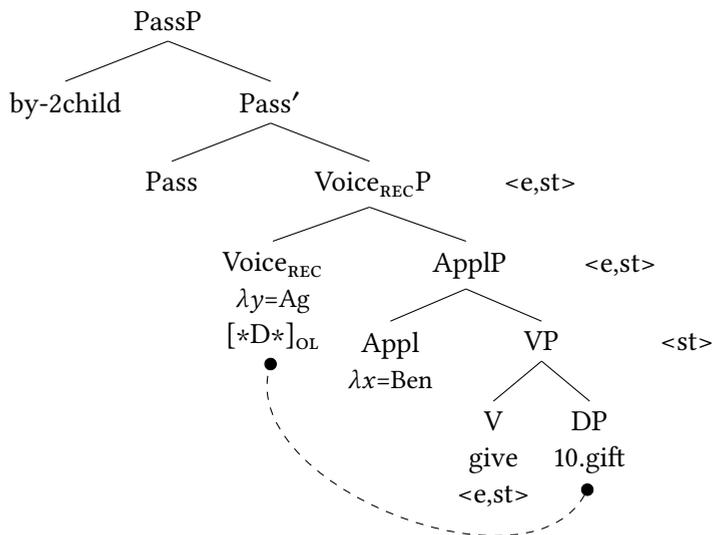
(27)  Umama  u-nced–w -e        ng-abantwana.
      1.mother 1.sbj-help-PASS -fv by-2.child
      'The mother was helped by the children.'

```
                      PassP
                   /        \
            by-2child       Pass′
                          /       \
                       Pass       VoiceP          = λy.λe.[y help mother](e)
                        -w       /      \
                             Voice       VP        = λe.[help mother](e)
                             λy=Ag      /    \
                                       V      DP
                                     help   1.mother
```

Recall from Section 3 that in an active sentence, the Agent variable introduced by Voice is saturated by the DP projected in Spec,VoiceP. In passives, VoiceP does not project a specifier, leaving the Agent argument unsaturated at the VoiceP level (type <e,st>). Instead, the Agent variable is saturated in PassP – either via existential closure or by a *by*-phrase projected in Spec,PassP, as in (27).

With the analysis of passives in place, we move on to the co-occurrence of passives and reciprocals. As discussed above, Reciprocal Voice is a type of agentive Voice. Like non-reciprocal Voice, it projects a DP specifier in active sentences, and it does not project a DP specifier in passives (to ensure the right type for Pass, namely <e,st>). The Agent variable can be saturated by a *by*-phrase, as in (28).
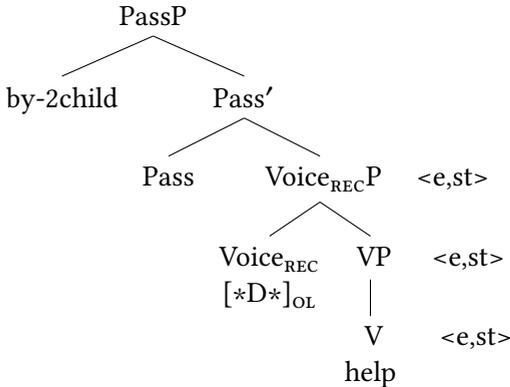
(28)  Izipho z-a-nik-⬚an⬚-⬚w⬚-a          ng-abantwana.
      10.gift 10sbj-pst-give-⬚rec⬚-⬚pass⬚-fv by-2.child
      'The gifts were given to each other by the children.'

```
                        PassP
                   ╱          ╲
            by-2child          Pass′
                           ╱          ╲
                        Pass        Voice_REC P    <e,st>
                                  ╱          ╲
                           Voice_REC         ApplP        <e,st>
                            λy=Ag          ╱       ╲
                            [∗D∗]_OL    Appl        VP        <st>
                               •       λx=Ben    ╱     ╲
                                                V       DP
                                              give    10.gift
                                             <e,st>
```

In (28), there are two functional heads that combine with predicates of type <e,st>: Voice_Rec and Pass. Consequently, the Benefactive DP cannot be projected in ApplP, and the Agent DP cannot be projected in VoiceP. This combination effectively transforms an underlying ditransitive predicate into a monotransitive structure, at least descriptively, when both Voice_Rec and Pass are present. The final step in this derivation is the checking of $[∗D∗]_{OL}$, which is required for the derivation to proceed. As shown in (28), this feature is checked by the Theme 'gift', yielding a licit structure.

The picture changes when Voice_Rec and Pass combine in the context of a monotransitive verb like 'help'. As shown in (29), the VP must lack its Theme argument in order to merge with Voice_Rec. However, because there is no other DP in the c-command domain of Voice_Rec, $[∗D∗]_{OL}$ cannot be checked by VP-internal material. While cyclic expansion of the probe could, in principle, allow checking by the specifier of Voice_Rec, no such specifier is projected in passives. As a result, $[∗D∗]_{OL}$ remains unchecked, and the derivation cannot proceed.
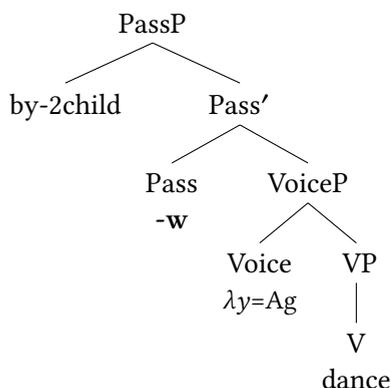
(29)  ??Kw-a-nced-⟨an⟩-⟨w⟩-a        ng-abantwana.
      15SBJ-DPST-help-REC-PASS-FV by-2.children
      'It was helped each other by the children.'

```
                    PassP
                   /     \
           by-2child      Pass′
                         /     \
                      Pass    Voice_REC P    <e,st>
                              /      \
                       Voice_REC    VP    <e,st>
                       [*D*]_OL     |
                                    V     <e,st>
                                   help
```

Note that semantic type requirements are not the problem in (29): the VP is of type <e,st>, as required by Voice$_{Rec}$, and Voice$_{Rec}$P is likewise of type <e,st>, as required by Pass. On our analysis, then, the incompatibility of a passive and a reciprocal in this context is purely syntactic. Voice$_{Rec}$ requires a DP in its checking domain, but neither the Theme nor the Agent can be projected here.

Finally, this analysis is compatible with the existence of impersonal passives in Ndebele, in which an unergative predicate is passivized. This is allowed simply because these constructions do not involve Voice$_{Rec}$, and neither regular Voice nor Pass have a D-checking requirement in Ndebele:

(30)  Kw-a-gid-⟨w⟩-a              ng-abantwana.
      15.SBJ-DPST-dance-PASS-FV by-2.child
      Lit. 'It was danced by the children.'

```
                    PassP
              ┌───────┴───────┐
         by-2child          Pass′
                       ┌──────┴──────┐
                     Pass          VoiceP
                      -w        ┌─────┴─────┐
                              Voice         VP
                              λy=Ag          │
                                             V
                                           dance
```

Thus, the problem in (29) is not that the language cannot passivize argumentless predicates. The culprit is Voice$_{\text{Rec}}$, which is absent in (30).

In this section, we argued that Voice$_{\text{Rec}}$ functions as an obligatory DP licensor, which restricts its ability to combine with passive voice. The two can co-occur only when at least one DP argument is projected, as in ditransitives, but not when their combination yields an argument domain with no DPs, as in monotransitives.

# 6 Transitivity Restriction as Obligatory DP Licensing

In the previous section, we saw that reciprocal constructions in Ndebele require the presence of at least one DP, which limits them to predicates whose valency before reciprocalization is 2 or more. In this way, they contrast with passives, which can apply even to intransitive predicates in Ndebele.

The transitivity restriction on reciprocals is similar to that on passives in languages like English. In such languages, passivization cannot apply to intransitive verbs, effectively requiring at least one DP in the passive structure. We propose that this restriction can be derived by extending Obligatory Licensing, introduced here for Voice$_{\text{Rec}}$, to Pass. In languages lacking impersonal passives, Pass bears $[*D*]_{\text{OL}}$. In the grammatical English passive in (31), this feature is checked by the Theme *mother*. A passive of an unergative verb, as in (32), is impossible because there is no DP available to check $[*D*]_{\text{OL}}$.

(31)   Mother was helped by children.   (32)   *It was danced by children.

*

PassP
PP — Pass′
by children
Pass [*D*]$_{\text{OL}}$ — VoiceP
Voice — VP
V — DP
help   mother

PassP
PP — Pass′
by children
Pass [*D*] — VoiceP
Voice — VP
V
dance
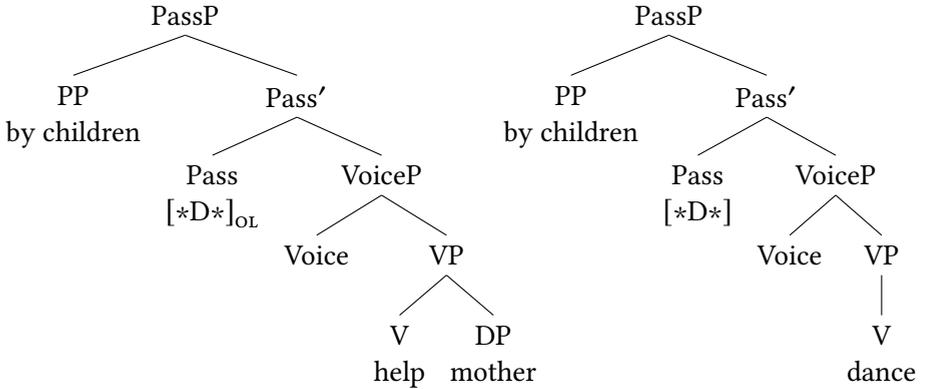
If both Voice$_{\text{Rec}}$ and Pass can bear [*D*]$_{\text{OL}}$ crosslinguistically, we predict the following typology (with example languages).

Table 1: Predicted transitivity restrictions in passives and reciprocals

|  | [*D*]$_{\text{OL}}$ | No [*D*]$_{\text{OL}}$ |
|---|---|---|
| Pass | English | Ndebele, German |
| Voice$_{\text{Rec}}$ | Ndebele | ? |

Passives are subject to a transitivity restriction in English, but not in Ndebele (other languages with impersonal passives include German, Dutch (Perlmutter 1978; Perlmutter & Postal 1984), Lithuanian (Šereikaitė 2022), and many others). This variation follows from the parametric availability of [*D*]$_{\text{OL}}$ in Pass. By the same logic, we predict that Voice$_{\text{Rec}}$ may vary crosslinguistically in whether it bears [*D*]$_{\text{OL}}$. Our findings support this prediction only in part: in Ndebele, Voice$_{\text{Rec}}$ does have [*D*]$_{\text{OL}}$. It remains an open question as to whether there are languages with verbal reciprocals—and thus with Voice$_{\text{Rec}}$—in which this head lacks a DP-licensing requirement. Such a language would pattern like Ndebele except that sentences like (29) would be acceptable. Testing this prediction is left for future work.

## 7 Conclusion

This paper argued that Ndebele reciprocals are verbal rather than pronominal: the reciprocal meaning is expressed by the suffix *-an*, which patterns morphologically and syntactically like other verbal extensions, and there is no evidence for an overt or covert reciprocal anaphor. Like other verbal reciprocals crosslinguistically, Ndebele reciprocals are valency-reducing, display restricted patterns of reciprocity (involving the Agent and the argument immediately below it), and allow only sloppy readings under ellipsis. These facts align closely with Bruening 2004; 2006 analysis, which we adopted as a starting point.

Building on this foundation, we proposed that the reciprocal Voice head in Ndebele bears an obligatory DP-licensing feature, $[*D*]_{OL}$. This property accounts for the distribution of reciprocals and for their restricted co-occurrence with passives: the two extensions can combine only in ditransitives, where a DP in the c-command domain of Voice$_{Rec}$ can satisfy the licensing requirement. In monotransitives, passivization removes the external argument and reciprocalization removes the internal argument, leaving no DP to check $[*D*]_{OL}$, resulting in ungrammaticality. This analysis allows us to draw a parallel between reciprocals in Ndebele and passives in many other languages (those without impersonal passives) – both are possible only if their argument domain contains at least one DP. We suggested that a unified account of both cases of transitivity restriction is via obligatory DP licensing by the relevant functional head.

## Abbreviations

Additional abbreviations: DPST - distant past, FV - final vowel, RPST - recent past.

## Acknowledgements

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