FISHING FOR CARP IN KINYARWANDA[*]

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1.   Introduction

When linearizing a series of functional heads, there are two intuitive options: either the surface order transparently reflects the underlying form, or some principle orders the heads in a non-transparent way. The idea that the surface order of derivational morphemes is entirely isomorphic to the syntactic c-command relations between the heads they realise is known as the Mirror Principle (Baker, 1985; Rice, 2006). In this view, surface order of heads reflects semantic scope, giving transparently compositional meaning. However, it has also been noted that derivational suffixes in Bantu languages tend to follow a fixed CAUS-APPL-RECP-PASS order known as the CARP template regardless of meaning (Hyman, 2003; Good, 2005).

These two notions are at odds with one another, predicting conflicting outputs for the same input. Investigating the interaction between these two principles can shed light on the source of morphological templaticity: does it stem from surface level morphological filters or deeper syntactic constraints?

This project explores this tension in Kinyarwanda. Previous studies have explored the behaviour of Luganda (McPherson and Paster, 2009), Chichewa (Zukoff, 2017), and Nyakusa and Ndebele (Myler, 2017). I will argue that the late-derivation constraints proposed to account for CARP in these languages is not suitable for Kinyarwanda. In particular, a syntactic movement account as proposed for Nyakusa and Ndebele is simply inapplicable to Kinyarwanda based on the data. An optimality theoretic account as proposed for Luganda and Chichewa is able to account for the behaviour of Kinyarwanda, but misses crucial syntactic correlates. I argue that CARP in Kinyarwanda should be implemented much earlier in the derivation, namely at the stage of syntactic selection, accounting not only for CARP order, but also independent syntactic properties of the heads in question.

The rest of the paper is arranged as follows. Section 2 presents some background on Kinyarwanda and templaticity in general. Section 3 presents the data from Kinyarwanda. Section 4 discusses the issues of surface level analysis and proposes a selectional account. Section 5 discusses remaining issues and next steps, and section 6 concludes.

2. Background

Given a pair of morphemes whose semantic scope is not compliant with the template (for example a causativized applicative), there are three ways that the conflict between CARP and the Mirror Principle could be resolved. The Mirror Principle could be obeyed at the cost of violating CARP, giving compositional order. Alternatively, CARP could be obeyed at the cost of the Mirror Principle, giving templatic order. Finally, the issue could be avoided through periphrasis in cases where the Mirror Principle and CARP are in conflict.

Chichewa shows both compositional and templatic orders for various pairs, and even allows either option sometimes, resulting in ambiguity. Zukoff (2017) analyses this behaviour through ranked constraints. Luganda displays only templatic order, as analysed by McPherson and Paster (2009) through ranked constraints. Nyakusa and Ndebele also show templatic order, however Myler (2017) presents an analysis based on syntactic movement. Kinyarwanda opts for periphrasis. To my knowledge, this option has not been studied in the literature and thus warrants attention.

Kinyarwanda is an Intralacustrine Bantu language spoken in Rwanda. Verbs are highly inflected, containing information about agreeing nominals, tense, aspect, mood, and valency changing verbal extensions which are of interest in this work. The order of morphemes is as follows:

(1) SUBJ.AGR- TENSE- NONSUBJ.AGR- **ROOT** -EXT -ASP -FV

The extensions in Kinyarwanda are: causative *-ish or -esh*, applicative *-ir or -er*, reciprocal *-an* and passive *-u or -bu*.[1]

3. Data

Given four verbal extensions, there are six unordered pairs of morphemes which can be composed to produce a maximum of twelve distinct scopal pairs. We shall see that not all of these are available. For each of the six unordered pairs or morphemes, one order is *harmonic* with respect to CARP and Mirror Principle in that it satisfies both principles simultaneously, while the other is *disharmonic* in that the two principles are in conflict.

3.1 The straightforward cases

For three of the six pairs of extensions, the data are straightforward. The harmonic case is as expected, and the disharmonic case is not available. Periphrasis is the means to express the desired disharmonic meaning. These are discussed below.

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[1] The allomorphs are phonologically conditioned. All predictable phonological alternations are suppressed in examples.

3.1.1 Causative and Applicative

Given that applicatives have benefactive uses, the harmonic case is an applicativized causative, which is expected to mean that the causation will benefit the beneficiary. The disharmonic case a causatizived applicative, which is expected to mean that an event that is caused will benefit the beneficiary.

(2) a. n-　za-　ku-　og　　-ish　-ir　-a umwana
　　　　SP.SG- FUT- AD.SG- bathe.ITR -CAUS -APPL -FV 1.child

　　　　　✔For you, I will wash the child.[2]　　　　　　　　[[V C] A]
　　　　　✘I will make the child bathe for you.　　　　　　　[[V A] C]

　　b. *n-　za-　mu-　ririmb -ir　　-ish　-a Ineza
　　　　SP.SG- FUT- 1-　sing　-APPL -CAUS -FV I.

　　　　Intended: I will have him/her [sing for Ineza].　　　[[V A] C]

　　　We see that the harmonic applicativized causative is straighforwardly available, whereas the disharmonic causativized applicative is not. In order to convey this, a periphrastic form is used, as shown below.

(3) n-　za-　mu- bwir -a ku- ririmb -ir　　-a Ineza
　　 SP.SG- FUT- 1-　tell -FV INF- sing　-APPL -FV I.

　　 I will tell him/her to sing for Ineza.

3.1.2 Causative and Passive

We expect the harmonic passivized causative to result in a construction where the causer is demoted by the passive, and the causee is raised to subject position. The disharmonic causativized passive should result in a supressed causee and a regularly expressed causer.

(4) a. Rama a- za- ubak -ish　-u　-a igikinisho na Cyuma
　　　　R.　1- FUT- build -CAUS -PSV -FV 7.toy　　by C.
　　　　✔Rama will be made to build the toy by Cyuma.　　[[V C] P]
　　　　✘Rama will cause the toy to be built by Cyuma.　　[[V P] C]

　　b. *Ineza a- za- ubak -u　-ish　-a igikinisho na Keza
　　　　I.　1- FUT- build -PSV -CAUS -FV 7.toy　　by K.
　　　　Intended: Ineza will cause the toy to be built by Keza.　[[V P] C]

　　　Once again we see the harmonic case surfaces straightforwardly, and the disharmonic case requires periphrasis as below.

(5) Ineza a- za- kor -a ukwashoboye igikinisho ki- za- ubak -u　　-e kwa Keza
　　 I.　1- FUT- do -FV 15.possible　7.toy　　7- FUT- build -PSV -FV chez K.

　　 Ineza will do what she can such that the toy is built by Keza.

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[2]The numbers in the glosses refer to Bantu noun class, thus 1 and 2 refer to third person singular and plural respectively. First person is denoted SP and second person AD.

3.1.3 Applicative and Reciprocal

In discussing these examples, it worth noting that the Kinyarwanda applicative has reason-introducing uses in addition to its cross-linguistically common benefactive use. This is illustrated below.

(6) umugabo a- ra-   som -ir   -a igitabo amatsiko
     1.man   1- PRES- read -APPL -FV 7.book 6.curiosity

     The man is reading the book out of curiosity.   (Kimenyi, 1995)

As such we can construct examples that are not completely parallel when investigating the harmonic and disharmonic forms. Adding the applicative to the root *advertise* results in the verb *recommend* with the indirect object being introduced by the applicative. Hence, the harmonic reciprocalized applicative should allow a meaning where the indirect object is reciprocally bound by the subject. Conversely, a disharmonic applicativized reciprocal should not allow this interpretation. As the reciprocal applied before the applicative, the only argument available to be reciprocally bound should be the direct object.

(7) a.   ba- a- ku-   rang   -ir   -an   -y -e
           2- PST- AD.SG- advertise -APPL -RECP -PFV -FV

           ✔They recommended you to each other.   [[V A] R]
           ✘They recommended each other to you.   [[V R] A]

     b. * tu-   a- ank -an   -ir   -y -e ibinyoma by-e
           SP.PL- PST- hate -RECP -APPL -PFV -FV 8.lie   8.GEN-1.POSS

           Intended: We hated each other because of his/her lies.   [[V R] A]

Yet again, we see that while the harmonic form is available, the disharmonic meaning requires periphrasis.

(8) tu-   a- ank -an   -y -e kubeera ibinyoma by-e
     SP.PL- PST- hate -RECP -PFV -FV because 8.lie   8.GEN-1.POSS

     We hated each other because of his lies.

3.2   The not-so-straightforward cases

For the remaining three pairs of extensions, the results are not so straightforward. For two pairs, independent facts about the nature of the morphemes leads to the disharmonic meaning being subsumed by the harmonic meaning. Thus we expect no conflict to arise in these cases. For the final case, neither form is deemed grammatical.

3.2.1 Causative and Reciprocal

Before beginning a discussion of the interaction between a causative and a reciprocal, some properties of the reciprocal in trivalent structures and trivalent structures in general need to

be discussed. Let us begin by establishing the structural relation between the indirect and direct objects of a ditransitive verb.

(9) nasiguriye buri shusho mwene wa-yo
1.PST.describe each 9.painting 1.owner 1.GEN-9.POSS

I described every painting to its owner.

Since a pronoun in indirect object can be bound by a quantifier in the direct object, we can conclude that the indirect object is c-commanded by the direct object in Kinyarwanda.[3] Let us now consider the possible interpretations if we attempt to reciprocalize a trivalent structure. In theory, three interpretations should be available: The subject binding either of the two objects, or the direct object binding the indirect object.

(10) tu- za- ba- erek -an -a
SP.PL- FUT- 2- show $\boxed{\text{-RECP}}$ -FV

✔We will introduce them$_i$ to each other$_i$.
✔We$_j$ will introduce them to each other$_j$.
✗We$_k$ will introduce each other$_k$ to them.

Notice however, that only two options exist. The direct object cannot be bound by the subject. I do not speculate on why this may be the case, simply noting that that this will have an effect on the expected interpretations of a reciprocalized causative, since causatives of ditransitives create trivalent structures.

Given that only the lowest argument in a trivalent structure can be reciprocally bound by either of the two higher arguments, we expect a reciprocalized causative [[V C] R] to mean 'X cause Y to verb X' or 'X cause Y to verb Y', but a causativized reciprocal [[V R] C] to only mean 'X cause Y to verb Y'.

Since a causative introduces an arugment higher in the tree than either of the two arguments of the transitive verb, a reciprocalized causative has two possible candidates to reciprocally bind the object of the transitive verb: the causer or the causee. However, a causativized reciprocal only has one candidate: the causee which was the only argument c-commanding the direct object when the reciprocal was applied. The reciprocalized causative is the harmonic structure, and the disharmonic structure would have one of the two possible meanings that the harmonic structure can. Thus we expect there to not be a situation in which the disharmonic structure would ever need to be used. And indeed this is what we see.

(11) a. n- a- ba- hober -ish -an -y -e
SP.SG- PST- 2- hug $\boxed{\text{-CAUS}}$ $\boxed{\text{-RECP}}$ -PFV -FV

I made them hug each other.

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[3]Whether or not it c-commands the direct object, resulting in object symmetry is not relevant at the time being, although the existence of symmetric passives of ditransitives suggests that perhaps this is the case.

b. tu-   a-   mu- hober -ish   -an   -y   -e
    SP.PL- PST- 1- hug   -CAUS -RECP -PFV -FV

    ✔We made him/her hug us
    ✖We made each other hug him/her.

By manipulating the number of the causer and causee arguments, we can direct the reciprocal to target one or the other as the binder. And we see above that the same order of morphemes, which is harmonic, is capable of expressing both meanings that would be possible by combining these two morphemes.

For posterity, I note that the CARP-violating order of morphemes, which would have the same meaning as (11a) is unavailable as well as unnecessary.

(12)   * n-   a-   ba- hober -an   -ish   -y   -e
        SP.SG- PST- 2- hug   -RECP -CAUS -PFV -FV

    Intended: I made them hug each other.

3.2.2 Applicative and Passive

Applicatives introduce arguments that have non-subject properties. For example, they do not control subject agreement, and when not pronounced in the inner phase are co-indexed on the verb with non-subject agreement like objects. Kinyarwanda also has symmetric passives of ditransitives. This means that either of the direct or indirect object can become the subject under passivization, showing subject agreement and being pronouned preverbally. This is shown below with the ditransitive verb *give*.

(13)   a. umuconwe u-   a-   ha   -bu -y   -e umwarimu
            3.orange 3- PST- give -PSV -PFV -FV 1.teacher

        The orange was given to the teacher.

    b. umwarimu a-   a-   ha   -bu -y   -e umuconwe
            1.teacher 1- PST- give -PSV -PFV -FV 3.orange

        The teacher was given the orange.

Since applicatives introduce arguments that are non-subject-like, we might expect passives of applicatives to show similar symmetry. Indeed they do, as shown below.

(14)   a.   u-   za- tek -ir   -u   -a ibyokurya
                AD.SG- FUT- cook -APPL -PSV -FV 8.food

        You will be cooked food.

    b.   ibyokurya bi- za- ku-   tek- ir   -u   -a
                8.food   8- FUT- AD.SG- cook -APPL -PSV -FV

        Food will be [cooked for you].

The harmonic passivized applicative has the option to either promote the beneficiary or the underlying object given the symmetric nature of the passive. However the disharmonic applicativized passive would only have the option to raise the underlying object before the beneficiary is introduced. Once again, we see that the meaning of the disharmonic case is independently expected to be available with the harmonic construction, and thus no tension exists. Once agan, for posterity, I note below that the CARP-violating order of morphemes in unavailable as well as unnecessary.

(15)   * ibyokurya bi- za- ku-   tek -u   -ir   -a
         8.food   8- FUT- AD.SG- cook -PSV -APPL -FV
       Intended: [Food will be cooked] for you.

3.2.3 Reciprocal and Passive

It is reasonable to assume that a supressed argument cannot reciprocally bind an expressed argument. Fortunately, ditransitives in Kinyarwanda provide us with a way to still test the compatibility of reciprocals and passives. Recall that that indirect object of a ditransitive could be reciprocally bound by the direct object as shown in example (10). Furthermore, recall that passives are symmetric, and thus the direct object of a transitive can be promoted to subject under passivization.

These two operations seem like they should commute. Passivization should not be sensitive to whether the promoted argument is a binder yet, and reciprocalization is not sensitive to whether the indirect object is being bound by a direct object or a subject. Thus we would predict that both a passivized reciprocal and a reciprocalized passive should be available. However, it turns out neither order of morphemes is allowed.

(16)   a.   * abanyeshuri ba- za- erek -an   -u   -a
               2.student   2- FUT- show -RECP -PSV -FV
            Intended: The students will be introduced to each other.

       b.   * abanyeshuri zi- za- erek -u   -an   -a
               2.student   10- FUT- show -PSV -RECP -FV
            Intended: The students will be introduced to each other.

Neither order of morphemes is available, including the CARP complaint one in (16a). It appears that the reciprocal and the passive are incompatible with one another, regardless of order. As a result, the periphrastic form offered by the consultant is a non-passive reciprocal with object fronting.

(17)   abanyeshuri n-   za- zi- erek -an   -a
       2.student   SP.SG- FUT- 10- show -RECP -FV
       The students, I will introduce them to each other.

3.3 Summary

We see that in Kinyarwanda the CARP-violating order of morphemes is never used. Of the six pairs of verbal extensions, in two cases the harmonic construction subsumed the meaning of the disharmonic construction, thus the CARP-violating order would not be expected. In one case, neither order is available. In the three remaining cases the harmonic meaning is conveyed straightforwardly with the morphemes in an order that complies with both CARP and the Mirror Principles. The disharmonic meanings require periphrasis to express. In each case, the disharmonic scope is achieved with a bi-clausal construction with the one CARP morpheme and a periphrastic element outscoping it to give the desired interpretation.

Notice crucially, that in every case, both CARP and the Mirror Principle are obeyed. In the two cases where the disharmonic meaning is subsumed by the harmonic form, the Mirror Principle is not being disobeyed. Independent properties of the morphemes themselves (binding abilities of the reciprocal and symmetry of passivization) lead us to expect this while respecting the Mirror Principle. Thus Kinyarwanda robustly chooses the third strategy to deal with conflict between the Mirror Principle and the CARP template, using periphrasis to avoid the issue if both cannot be jointly satisfied.

4. Analysis

Previous accounts of templatic morphology in Bantu languages in a minimalist framework have either been optimality theoretic (Prince and Smolensky, 1993) or based on syntactic movement. I argue that the syntactic movement accounts are not applicable to Kinyarwanda, and that an optimality theoretic account, while successful at capturing the behaviour of Kinyarwanda extensions is not illuminating. I propose a selectional account based on Harley (2008) and especially Pylkkänen (2008) which not only captures the order of extensions, but also fits with other syntactic facts about the behaviour of the morphemes.

4.1 Previous analyses

Myler (2017) presents a syntactic movement account of templatic order in Nyakusa and Ndebele. In Nyakusa, the long causative (also called transitive Good (2005)) causes spirantization of the root. The morpheme template requires the long causative to be after the reciprocal. However, we see that reciprocalized causative still shows spirantization, unlike a causativized reciprocal.

(18) Nyakusa spirantization (Myler, 2017, 105)

   a. sob-an-i
     lose-RECP-TRANS
     Get each other lost

   b. sof-an-i
     lose-RECP-TRANS
     Lose each other

Myler takes this as evidence that the reciprocalized causative underlyingly involved a causative adjacent to the root trigger spirantization (/sob/ → [sof]) followed by movement outside

the higher reciprocal. Facts from reduplication in Ndebele lead to similar conclusion. The disharmonic case has greater options for teh reduplicant than the harmonic case does, despite the root having the same form in both. This suggests that at some point in the derivation of the disharmonic case, a distinct base was available for the reduplicant to copy, once again suggesting movement. However, these analyses are only relevant in cases where there is fixed order with ambiguity. Kinyarwanda shows two such cases: causatives with reciprocals and applicatives with passives. Yet we noted that in both cases, independent properties of the extensions lead us to expect ambiguity. Movement is not required to account for them. For the remaining cases, the CARP-compliant form is not ambiguous. Thus approaches that seek to derive ambiguity are simply inapplicable to Kinyarwanda.

Optimality theoretic accounts generally split each of CARP and Mirror Principle into bigram constraints (Ryan, 2010) in order to leverage factorial typology to be able to describe both the pairs of extensions that show compositional order and the pairs that show fixed order at the same time. Bigram constraints are those that reference the order between two extensions. Accounts along these lines include McPherson and Paster (2009) for Luganda and Zukoff (2017) for Chichewa. In the case of Kinyarwanda however, we do not need to split either the Mirror Principle or CARP, given that both are always obeyed. In addition, we need a constraint to force periphrasis. The constraints needed are listed below.

(19) Constraints

    a. CARP: one violation for each pair of morphemes disobeying the CARP template

    b. MIRROR: one violation for each pair of morphemes not compliant with the Mirror Principle

    c. M-PARSE: one violation for each morpheme not realised in the output

Orginally designed to account for paradigm gaps, M-PARSE penalises the non-realisation of morphological structure (Prince and Smolensky, 1993). By ranking a constraint above M-PARSE non-realisation will be preferred to any candidate that violates the higher ranked constraint. Consider the tableau below:

V-PSV-CAUS		CARP	MIRROR	M-PARSE
a.	V-CAUS-PSV		*!	
b.	VPSV-CAUS	*!		
c. ☞	∅			**

With this ranking, it is imperative that both CARP and the Mirror Principle be simultaneously satisfied if the form is to be realised. If it is not possible to do so, not realising either form is a preferred option. The form of periphrasis not being used is not within the purvey of this approach. While this is able to predict that a form with both extensions cannot surface is the CARP template and the Mirror Principle are not both satisfied, it does not capture why the harmonic passivized reciprocal is unavailable. Nor does it capture other scopal

properties of the extensions like compatibility with unaccusatives, position in the tree, etc. The selectional account outlined in the next section not only predicts the extension ordering facts, but also takes these other syntactic properties into account.

4.2 A selectional account

In this section I show that an account based on selectional restrictions following the work of Harley (2008) on causatives and especially Pylkkänen (2008) on causatives and applicatives is more successful at accounting for the behaviour of Kinyarwanda. The order of morphemes is rigid because each functional head is limited in terms of which phrases it can select in its complement. But due to this restriction, there is no ambiguity: the order is both fixed and transparent at the same time. Let us go through each extension individually and determine its relevant properties for such an account. Following Pylkkänen (2008) and others, I am assuming that the structure of the inner phase is as follows: [Voice [v [$\sqrt{}$]]]

4.2.1 Causative

Pylkkänen (2008) provides tests to determine the nature of the causative in a language. Based on three of them, we can conclude the label and the selection properties of the causative.[4] Given the tree assumed for the inner phase, the causative could either be a type of Voice head or a type of v head (which introduces an event), and it could select either the phase head, the event, or the acategorial root.

(20) Unaccusative causative

n- a- mu- gu -ish -y- e
SP.SG- PST- 1- fall -CAUS -PFV -FV

I made him/her fall.

The availibility of an unaccusative causative for Pylkkänen (2008) is an indication that the causative head is distinct from the Voice head, which introduces agents. Unaccusatives are not agentive, and thus an unaccusative causative is only possible if the causative does not introduce an agent for the caused verb. This means that the Kinyarwanda causative is not a Voice head, but a v head which introduces a causation event.

(21) Intervening argument introduction

*n- za- mu- ririmb -ir -ish -a Ineza
SP.SG- FUT- 1- sing -APPL -CAUS -FV Ineza

Intended: I will make them.SG [sing for Ineza].

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[4]The fourth test, agent-oriented adverb scope, cannot be used in Kinyarwanda due to the lack of agent-oriented adverbs. Kinyarwanda uses fully inflected verbs instead; e.g. 'intentionally' is rendered as *m-/u-/a-bishaka* meaning 'I/you/he/she wanted it'.

As per McGinnis (2001), APPL is a phase head.[5] The inability to have a phase head inside the causative is taken by Pylkkänen (2008) as evidence that the causative is not a phase-selecting causative, and thus is lower than Voice.

(22) Low modification

n-	a-	mu-	ubak	-ish	-y	-e	igikinisho	vuba
SP.SG-	PST-	1-	build	-CAUS	-PFV	-FV	7.toy	quickly

✔I made him/her [build the toy quickly].
✘I quickly made him/her build the toy.

The ability to modify the building with an adverb indicates that there are two events at play with the Kinyarwanda causative. One is the embedded event, which is shown to be modifiable here, and the other is the causation event. If the embedded event exists, it must be because the causative selects an even-introducing vP.

Thus from these tests we have learned that the Kinyarwanda causative is not phase- or root-selecting, but event-selecting, and that it is an event introducer as well. This makes it a vP selecting v head.

4.2.2 Applicative

There are three types of applicatives, classified based on their position in the tree and the types of arguments they introduce. As per Pylkkänen (2008) these are: high applicatives, low source applicatives, and low recipient applicatives. As their names suggest the two types of low applicatives are restricted in terms of what kinds of arguments they introduce. They introduce arguments that bear some relation to the direct object, since no event structure exists at the point in the derivation where they are added. Unlike low applicatives, high applicatives attach later, above the vP and introduce an argument that bears some thematic relation to the event described by the verb, but without restrictions on what kind of relation. As such, high applicatives show more varied uses, introducing not only beneficiaries, but also locations and reasons. The Kinyarwanda applicative has all the hallmarks of a high applicative.

(23) a.

a-	ra-	ku-	byin	-ir	-a
1-	PRES-	AD.SG-	dance	-APPL	-FV

S/he is dancing for you.

b.

a-	ra-	som	*(-ir)	-a	igitabo	mu-inzu
1-	PRES-	read	-APPL-	FV	7.book	PREP-9.house

S/he is reading the book in the house.

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[5]Only high applicatives are phase heads for McGinnis (2001), but we shall soon see that the applicative in Kinyarwanda is indeed of the high sort.

c. u-   ra-   andik -ir   -a   ibaruwa iki
   AD.SG- PRES- write -APPL -FV 9.letter what

   Why are you writing a letter?

Example (23a) shows an introduced beneficiary, (23b) a location, and (23c) a reason. Notice that even when a preposition is present, the applicative is still required to introduce the location to the event.

As per McGinnis (2001) high applicatives select a *v*P and project a phasal ApplP.

4.2.3 Reciprocal and Passive

In order to account for the behaviour of the reciprocal and the passive, some facts about the reciprocal need to be discussed first.

As was noted in the section 2, the reciprocal morpheme has depatientive uses. Consider the examples below.

(24) a. a- a- hober -y   -e *(Cyuma)
         1- PST- hug   -PFV -FV *(C.)

         S/he hugged *(Cyuma).

      b. a- a- hober -an   -y   -e
         1- PST- hug   -RECP -PFV -FV

         S/he went around hugging people.

Example (24a) establishes that *hug* is obligatorily transitive. Example (24b) shows that the reciprocal morpheme can be used to suppress the object even when the subject is singular and thus cannot reciprocally bind the object. The interpretation of the reciprocal in this case is one of iteration, distributed across arbitrary objects.

Following, Halpert's (2015) claim for Zulu, suppose the above example is evidence that Kinyarwanda also has Case, contra claims that Bantu lacks abstract Case (Diercks, 2012). Then we could leverage the case licensing of the object by the Voice head in order to capture the facts at hand. This is the approach taken by Ndayiragije (2003) for Kirundi, which also has a reciprocal morpheme with depatientive uses.

As per Ndayiragije (2003), the reciprocal morpheme in Kirundi is a Voice head that discharges Null Case. Null Case licensing only PRO, not lexical DPs or *pro*, and thus there are only two options for the direct object if it is being assigned Null Case: a referential PRO or an arbitrary PRO. In Ndayiragije's (2003) analysis, a referential PRO locally bound by the subject accounts for the reciprocal reading, while an arbitrary PRO accounts for the depatientive reading.

If we adopt Ndayiragije's (2003) proposal for Kirundi in Kinyarwanda as well, we can explain the unavailability of both reciprocal and passive in the same verb stem. Since both the reciprocal and the passive are flavours of the Voice head, it is not possible for them to co-occur as each clause contains a single Voice head. Voice head select *v*P or ApplP as their complements.

4.2.4 Summary

The selectional account developed states the following:

(25) a. CAUS selects a *v*P and projects a *v*P

b. APPL selects a *v*P and projects an ApplP

c. RECP selects either a *v*P or an ApplP and projects a VoiceP

d. PSV selects either a *v*P or an ApplP and projects a VoiceP

The rigidity and lack of ambiguity seen in Kinyarwanda extension ordering is now readily explained. The order of extensions is rigid due to selectional restrictions which prevent certain head from composing in non-CARP orders. There is no ambiguity because the CARP order is not a surface phenomenon - it is reflected in the structure as soon as more than one extension is merged.

Thus the selectional account not only capture the morpheme ordering data, but also is congruent with the adverbial modification, argument introduction, and co-occurrence facts not accounted for in an optimality theoretic proposal.

5. Next steps

While the account sketched in the previous section successfully captures the morpheme ordering facts in Kinyarwanda as well as some of the independent properties of the extensions themselves, much work remains to be done on the syntax and semantics of these morphemes individually. In particular, the nature of the reciprocal/depatientive extension remains mysterious.

The selectional account assumes that it is a single morpheme that performs both of these roles. Yet it may be that the reciprocal and depatientive are in fact distinct morphemes. The first step to investigating whether this is the case is to establish that the distributions of the two morphemes with respect to the other verbal extensions are the same. This paper outlines the distribution of the reciprocal use, but not that of the depatientive.

Another issue that pertains to the reciprocal morpheme is in the details of the analysis adopted from Ndayiragije (2003) for Kirundi. Argument suppression could proceed through saturation, as Ndayiragije (2003) proposes, or through suppression of licensing, as it does for the passive. Whether a saturation analysis is appropriate for the reciprocal/depatientive requires investigation. Nduku Kioko (1999) argues that reciprocalization is an instance of suppression and not saturation in Kikamba (see Mchombo (1993) and Buell (2005) for similar facts in Chichewa and Zulu respectively). It remains to be seen how this operation proceeds in Kinyarwanda. Rizzi (1986) provides a series of tests for syntactic activity of null arguments, including ability to bind, control, and be modified by small clauses. Performing these tests will help determine whether the missing object in the depatientive use for example is syntactically present or not, thereby reflective whether there is saturation or suppression. Furthermore, Landau (2000) notes that PRO is object position is unattested,

and that is exactly what has been proposed for Kirundi. Having confirmation or refutation from Kinyarwanda can help to shed light on this area.

The final area lacking clarity is the syntactic difference between the reciprocal and the reflexive in Kinyarwanda. If it is the case that the reciprocal is a bound PRO in object position, we would expect that a singular subject with the reciprocal morpheme should result in a reflexive interpretation, but it does not. A separate reflexive marker is required.

(26) a. a- a- hober -an   -y -e   b. a- a- i-   hober -y -e
           1- PST- hug   -RECP -PFV -FV   1- PST- REFL- hug   -PFV -FV
           ✔S/he went around hugging people.   S/he hugged him/herself.
           ✖S/he hugged him/herself.

A tentative suggestion is that the reciprocal/depatientive marker has distributive semantics and thus is incompatible with a reflexive interpretation. Both the reciprocal and the depatientive use involve multiple events distributed across the patients, which is not possible with a reflexive. Nonetheless, further study is required to determine whether this in indeed relevant to the semantics of the reciprocal/depatientive.

6.   Conclusion

This paper investigated the tension between templatic morphology and the Mirror Principle in Kinyarwanda. Unlike previous investigations of other Bantu languages, this paper argued that Kinyarwanda shows a rigid behaviour in which both the Mirror Principle and the CARP template must be jointly satisfied. If they cannot be, periphrasis is used where possible.

Syntactic movement-based accounts of the interaction between templates and the Mirror Principle were shown to be inapplicable to this case, and Optimality Theoretic analyses while successful, were argued to not be illuminating. A syntactic account based on selection was argued for instead. The lack of unexpected ambiguity or commutativity of the verbal extensions follows straightforwardly from this account, where each extension instantiates a functional projection with particular requirements on its complement. This result suggests that templatic morphology on the surface can be implemented at a variety of stages of the derivation: from the earliest moments of structure building by means of selection, as arued for in this paper for Kinarwanda, to syntactic movements due to featural attraction, as has been proposed for Nyakusa and Ndebele by Myler (2017), to surface-level morpheme ordering constraints in an Optimality Theoretic framework, as argued for Luganda by McPherson and Paster (2009). This supports a view that morpheme templates are not a monolithic phenomena, but rather a surface-level characterization of behaviour that may underlyingly be driven by a variety of syntactic and linearization constraints.

Work remains to be done both on broad and narrow topics pertaining to the Bantu verbal extensions and templatic morphology. Narrow questions include those about the semantics and syntax of individual extensions and their similarity and diversity across the Bantu family. Broad questions include those about the feasibility to re-analyse surface-level

characterizations of templatic morphology through syntactic accounts, a project which was partially undertaken in this work.

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