

Theory and Description: Understanding the Syntax of Eegimaa Verb Stem Morphology

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1.0 Introduction

The goal of theoretical linguistics conceived of as a cognitive science is to understand the nature of the language capacity of all human beings, but our linguistic experience is always specific, so much so that people who speak a language natively distinguish native fluency from secondary learning in others. Jóola-Eegimaa (Eegimaa, henceforth), an endangered Atlantic language of the Niger-Congo family,¹ has a rich agglutinative morphology that results in complex words that often permit multiple readings for the same surface form. The regular nature and limitations of these ambiguities suggests that they are generated by systematic knowledge that each Eegimaa speaker has acquired. If we are to preserve the knowledge people have, we cannot simply catalogue the outward forms they produce, but we must understand the organizing principles of that knowledge that permits it to be used creatively to meet new circumstances. We propose to analyze a portion of Eegimaa in a way that shows how Eegimaa speakers recover compositional interpretations, or specific sets of compositional interpretations, from sequences of verb stem affixes that seem challenging for any compositional analysis. Insofar as our endeavor is successful, it reveals how general features of the language faculty interact with specific lexical properties of Eegimaa morphemes to predict the order and interpretation of Eegimaa verb stem morphology, including a range of phenomena that our theory-driven methodology leads us to uncover. Admittedly, our methodology is blind to the fact that Eegimaa is endangered, as any other language with a complex morphology would be approached with the same theoretical perspective, but the urgency of what must be achieved by theoretical analysis, namely, understanding what Eegimaa speakers actively and dynamically know, is different because of Eegimaa's endangered status.

Eegimaa is an Atlantic language of the Bak subfamily spoken in the southern part of Senegal, more precisely in the region of Ziguinchor. Other Bak languages are spoken in southern Senegal and also in the neighboring countries of Gambia and Guinea-Bissau. There are approximately 7000 people who would identify themselves as Jóola from the Eegimaa community, but not all of that number speak Eegimaa for a variety of reasons and the language is endangered due to a number of factors. First, French is the official language with about 15% of Senegalese reported to be fluent in French. According to recent studies, 90% of Senegal's population speaks Wolof (both native and second language speakers), a legacy of alliances formed when Senegal was colonized and ruled by the French. Wolof culture (music, cuisine, clothes, etc.) is dominant and Wolof people are extremely influential in the economy, the political arena and the spiritual life in Senegal. For a very long time, they controlled all three. Wolof (although it does not have the status of an official language) is also used in all official matters (in the national assembly, in the president's cabinet meetings, in all official announcements, and in all other areas of the administration). Formal education is the only area where French is the only language used. Otherwise, in all other areas of the government, both are used and in most of these, Wolof has actually upstaged French. Given these conditions,

¹ The data upon which our study is based was collected through months of elicitation with native speakers, Mamadou Bassene primarily, and his uncles Louis Eketubo Bassene and Rene Bassene, and his cousin Noel Bassene. Most of the data included in this paper and much more besides is freely available in the Afranaph Database (Ongoing). Both authors acknowledge the support of NSF BCS-0919086 and NSF BCS-1324404.

particularly concerns about economic opportunity, often leads some Eegimaa parents living in the cities not to speak their native language to their children (since Eegimaa is very restricted in terms of where you can use it), and instead, they speak French and Wolof to their children. Moreover, exposure to mass culture, to Christianity and other religions (as opposed to traditional Jóola practice), and the proliferation of social media only impress upon Eegimaa youth the value of French and Wolof. Finally, Eegimaa does not have a written tradition. There is a writing system proposed by SIL and revised by the Eegimaa linguists, but at present the system is totally unknown to the people.

Our approach to the study of Eegimaa in this paper is scientific. Scientific approaches to any problem begin with questions about why things are the way they appear to be. If a theory predicts empirical patterns that are not superficially visible, then either a subtler analysis must show the pattern is present but obscured, or perhaps the theory must change to provide a better explanation. Theories may shape our perception of the facts, but empirical patterns also shape our perceptions of our theories. When theoretical inquiry leads us to discover empirical patterns that we would not have discovered without the theory that generated the research question, we are making progress even if the theory we begin with does not turn out to be the best explanation. In this sense, theories are indispensable tools for empirical discovery and are thus vital to linguistic description.

In this spirit, it is helpful to understand what an idealized rational version of how morphology might work if languages were not complex human products influenced by centuries of cultural change and contact with other languages. Our best theoretical understanding of how grammars are structured leads us to certain expectations about the relations between organizing principles, such as compositionality, constituent relations, linear contiguity, and lexical integrity. From this perspective, a fully ‘harmonic’ relation holding between the linguistic sub-units of a verb stem, as those sub-units are defined by different criteria, might be characterized as in (1), on the simplifying assumption that Y and Z are both suffixes, but the same reasoning would apply if they were prefixes.²

- 1) The affix Y **linearly closest** to stem X forms a **syntactic unit** [X Y], a **morphological unit** X-Y, and [X Y] is **compositionally interpreted** before any affix Z is added such that [[X Y] Z] and X-Y-Z.

The agglutinative verb stem morphology of Eegimaa is not completely harmonic in this way for the following reasons: Linear order is insufficient to predict what counts as a structural unit. Moreover, processes that may be used to distinguish morphological units permit some structural relations to be posited, while others are underdetermined. Finally, neither linear order nor the isolation of morphological units suffice on their own to explain how interpretations are composed. We argue that our analysis, which relies on several operations that rearrange the underlying syntactic structure of the verb stem in Eegimaa, permits the various demands of syntax, semantics and morphology to receive a unified analysis for which there is striking empirical support. In so doing, theoretical exploration brings to light the grammar underlying what Eegimaa speakers know, which is fundamental to any attempt to preserve and regenerate that knowledge.

² Baker’s Mirror Principle (Baker, 1985) is guided by the assumption that (1) is generally true and also that grammatical alternations of elements outside the stem are simultaneously achieved with each addition of an affix associated with the alternation. The latter assumption is not made here and not explored.

The heart of our proposal is that syntactic movement of sub-stem units within a verb stem disguises an underlying harmony of structure and interpretation. Using a minimalist approach to structure-building, we posit ‘inner stem’ movement and argument affix movement to explain robust regularities of form and interpretation in Eegimaa that are challenging for any other approach (insofar as we have space to show this, but see Safir and Bassene, forthcoming). In the course of defending our approach, we are led to search for, and find, richer empirical patterns that emerge from the theoretically motivated questions that we ask.

In section 2 we describe just one of several conundrums posed by the Eegimaa data, whereby material linearly distant from the stem should be compositionally closer to it. We propose inner stem movement as a solution to this puzzle. In section 3 we show how the complex *v* (the inner stem) is constructed before movement and we derive the stem final position of Eegimaa object markers (OMs). In contrast to reflexive and reciprocal markers, which affix to *v* to form the inner stem, OMs cliticize to *vP* and are stranded when inner stem movement applies. We support our analysis with evidence for argument affix climbing out of infinitives. Section 4 briefly considers and rejects alternative analyses and then we conclude.

2.0 Stem affix ordering and inner stem movement

We begin in 2.1 by providing an array of basic facts about the pattern of affixation in Eegimaa and some relatively straightforward analytic distinctions that characterize the regularities in the pattern. The puzzle posed by the lack of harmony in the system is presented in 2.2 along with our proposal which reveals what we believe to be the underlying compositionality of Eegimaa stem structure.

2.1 Eegimaa verb stem affixes

Eegimaa is a noun class language. Though there is no full agreement about how many noun classes there are,³ it is notable that singulars and plurals of a given noun are in different classes, much as in Bantu systems. The language is SVO and pro-drop, in that the subject agreement marker (SM) suffices to saturate the subject of any clause except the infinitive. The SM appears whether or not there is an overt DP subject. There are essentially only two prefixes to verbs in Eegimaa, one of which is the SM, which is in complementary distribution with the infinitive marker (which may also be a noun class marker). The SM is sometimes preceded by a prefix *n-* which is generally not possible with infinitives or in clauses with irrealis meanings.⁴ We will later posit that SM is hosted by the realis (RLS) head, which is in complementary distribution with the infinitival marker and only surfaces as *n-* preceding SMs that start with a vowel (1st, 2nd and 3rd singular and 1st plural, see Bassene, 2012:70-71).

Our main focus, however, is on the verb suffixes, of which there are quite a few.⁵ The causative (CAUS)=*en*⁶, reversative (REV) *-ul* and the inherent reflexive (IRM) *=-o* (invariant) can only attach to the root and are mutually exclusive. These are followed by the reciprocal marker (RCM)⁷*=-or* (invariant) and the reflexive marker, RFM=*-oro* (also invariant), both of

³ See in particular Sagna (2008, 2010) and Bassene (2012).

⁴ The *n-* prefix also disappears in certain environments where something has been fronted.

⁵ The orthography we employ is current (unofficial) Eegimaa spelling and is without phonetic symbols. For more phonetic detail, see Bassene (2012).

⁶ The repetitive (REP) suffix *-en* fills the same slot as CAUS and is either another meaning possible for the root-sensitive *-en* affix or else the two affixes are just mutually exclusive.

⁷ Although we call this marker ‘RCM’ as a matter of descriptive convenience, it has other meanings that we will discuss and we make no assumption that the reciprocal reading is primary or that any one of these readings

which can appear more than once. RFM and RCM also can appear in either order with interpretive consequences to be discussed. The order of the remaining affixes is fixed. These include ‘former’ (FMR) *-en*,⁸ locative (LOC) *-ul* and centripetal (CPL) *-o*,⁹ habitual (HAB) *-e*, perfective (PFV)¹⁰ *-e*, negation (NEG) *-ut* (but there are allomorphs), inclusive (ICV) *-a* and *-al*, which are only employed to restrict human 1st plural, followed by passive (PASS) *-i* and finally the object marker (OM) for which there is a full noun class and person paradigm. CAUS is not usually affixed to transitive verbs, although the conditions under which it can be are murky.¹¹ PFV cannot co-occur with PASS, NEG, or the OM. For reasons of space, we provide just a few illustrative examples in (2) although subsequent examples will show the same pattern for other affix combinations. (See the Appendix for a full list of glosses and abbreviations)

- 2a) u-ññil wawu gu-tey-en-or-en-e-tey-en-or
 CL-child CL.DEF SM.3rd.PL-run-CAUS-RCM-FMR-HAB-run-CAUS-RCM
 The children used to cause each other to run.
- b) n-u-lluj-a-il
 RLS-1st.PL-watch-ICV-OM.3rd.PL
 We (inclusive) watch them.
- c) e-sodali yai gu-jow-ul-at
 CL-soldier CL.DEF SM.3rd.PL-walk-LOC-NEG
 The soldiers did not come.
- d) u-wañ-a wawu gu-pos-o-ul-o
 CL-cultivate-AGT CL.DEF SM.3rd.PL-wash-IRM-LOC-CPL
 The farmers washed and then came.

The sequences CAUS>RCM>FMR>HAB, ICV>OM, LOC>NEG and IRM>LOC>OM are illustrated in (2a,b,c,d) respectively. The reduplication (RED) in (2a), to which we return, is necessary to disambiguate HAB, *-e*, from PFV, *-e*, as PFV is incompatible with reduplication. It is possible to have more than one OM, either for double object verbs, benefactive arguments added to transitive verbs or causatives, and in these cases the order of the OM is fixed for some combinations, and optional for others (a matter explored in detail in Safir and Bassene, forthcoming). The OM is normally in complementary distribution with an overt direct object (DO) if the two would share the same thematic role and the same is true with an OM and a corresponding indirect object (IO) or benefactive argument (BEN). In (3) we present the verb suffix sequences, where optional order is indicated with a comma and complementary

necessarily derives from the others.

⁸ This suffix can be used in nouns to describe, for example, a former president (*a-piresidang-en*), but it has an aspectual use in Eegimaa verb stems, describing a situation that did obtain, but that obtains no longer, e.g. *‘Nixi gu-tiñ-en-tiñ su-ol’*, they SM.3rd.PL-eat-FMR-eat fish, ‘They used to eat fish’. Sagna (2008:108) describes it as ‘inactualis’.

⁹ A.-C. Bassene (2007) describes *-o* as ‘centripetal’, meaning that it describes an action moving toward the speaker.

¹⁰ We will refer to the affix as PFV as a matter of descriptive convenience, but we do so with the caveat that later analysis may suggest a different gloss for this affix. A.-C. Bassene (2007) glosses the same affix simply as a tense-aspect marker (TAM), but the contribution of this morpheme remains unclear.

¹¹ See A.C. Bassene, (2007: chapter 8) for the variety of causative constructions that are possible and the remark that CAUS affixation to transitives is limited (p.148). The morphological causative, however, is always *-en-*. This affix is homophonous with REP, e.g., as in *-sal* ‘praise’ and *e-sal-en*, ‘to praise repeatedly’. Since *-sal* is transitive, only the repetitive meaning is acceptable, but otherwise REP is complementary distribution with CAUS.. The causative *-en* should not be confused with FMR, also *-en*; These two affixes are distinguished by what can precede them – nothing but the root can precede CAUS, but FMR can follow CAUS and other affixes, as we have illustrated.

distribution in a given position is indicated by a slash.¹²

3) Root>CAUS/IRM/REP/REV> RCM, RFM>

FMR>LOC>CPL>ICV>HAB>NEG/PFV>PASS/PFV>OM, OM...>RED

The weight of the stem they attach to (one syllable, two, or more) does not influence the form of any of the suffixes, even for suffixes like NEG which, for example, shows special allomorphy when preceded by HAB, but not by FMR.

4a) á-jug-e-rit w-aare wawu
 SM.3rd.SG-see-HAB-NEG CL-woman CL.DEF
 ‘S/he habitually does not see the women.’

b) gu-bukko-e-rit,
 SM.3rd.PL-injure-HAB-NEG
 ‘they are habitually not injured’

c) a-jug-en-ut w-aare wawu
 SM.3rd.SG-see-FMR-NEG CL-woman CL.DEF
 ‘She did not (formerly/previously) see the women’

d) gu-bukko-en-ut
 SM.3rd.PL-injure-FMR-NEG
 ‘they were not (formerly/previously) injured’

Further affixation extending the stem before or after NEG does not change this pattern, so it is only sensitive to the affix that precedes it, not to stem weight.

Most verb stems with compatible semantics can be nominalized by several nominalizing affixes,¹³ though the only one that will be mentioned here is agentive (AGT). Benefactive (BEN) arguments, either as DPs or in the form of OMs, can appear on the stem with or without other OMs, but there is no visible applicative marker.

2.1.1 Apparent morphological sub-stem units

We identify certain sequences of affixes on the stem as subunits of the stem and every such subunit acts as a proper subpart of a larger one according to the schema produced below (with several affixes left out for the purposes of presentation).

5) [[RLS.SM [[[[[root] IRM/CAUS/REV]_{inmost} RCM/RFM]_{inner} FMR...PASS~PFV]_{outer} OM]_{outmost} RED]

In examples (6c) and (6d) below, RED only copies the inner stem and typically (but not always, as in the case of (2a)) provides an emphatic reading not just to the effect that they did make someone stand, but also to the fact that they did so either reciprocally or reflexively. In other words, the reading of every reduplicated morpheme (the italicized in the glosses of (6c,d)) is emphasized.

6a) U-ññil wawu gu-il-en-or-en-e
 CL-child CL.DEF SM.3rd.PL-stand-CAUS-RCM-FMR-PFV
 ‘The children made each other formerly stand (up)’

b) U-ññil wawu gu-il-en-oro-e-ol
 CL-child CL.DEF SM.3rd.PL-stand-CAUS-RFM-HAB-OM

¹² An additional suffix mentioned in the literature is *-ali* ‘early’ (see A.C. Bassene, 2007:70-71) which we have only recently learned behaves as if it is in the inner stem ordered after RCM/RFM. We will not comment on it here, but see Bassene and Safir (forthcoming) where it is integrated into our analysis and some adverbial readings of RFM/RCM are also addressed.

¹³ See Bassene (2012). For a brief summary of similar data, see A.-C. Bassene (2007:71) and Sagna (2008:109-110).

- ‘The children habitually made themselves stand for him’ or
‘The children habitually made him stand for their benefit’
- c) U-ññil wawu gu-il-en-or-en-e-il-en-or
CL-child CL.DEF SM.3rd.PL-stand-CAUS-RCM-FMR-HAB-*stand-CAUS-RCM*
‘The children really made each other stand (back then/ formerly)’
- d) U-ññil wawu gu-il-en-oro-ol-il-en-oro
CL-child CL.DEF SM.3rd.PL-stand-CAUS-RFM-OM-*stand-CAUS-RFM*
‘The children really made themselves stand for him’ or
‘The children really made him stand for their benefit’
- e) Ga-negen gagu gú-ppeg-ul-or-i'-ppeg-ul-or
CL-door CL.DEF CL-close-REV-RCM-PASS-*close-REV-RCM*
‘The door was repeatedly opened.

Since reduplication applies to a subportion of the stem, we take that subportion to be at least a morphological unit distinguishable from the rest of the stem. Distinctions like these justify the morphological bracketing in (5).

The generalization in (8), is based on (7a,b) where indirect objects (IO) or benefactive arguments (BEN) are interpretively distinguished from direct objects (DO), as illustrated in (8).

- 7a) gu-sal-oro-or
SM.3rd.pl-praise-RFM-RCM
‘They praised each other for themselves.’
*‘They praised themselves for each other.’
- b) gu-sal-or-oro
SM.3rd.pl-praise-RCM-RFM
*‘They praised each other for themselves.’
‘They praised themselves for each other.’

- 8) When both the IO/BEN and the DO are represented on the stem by RFM and RCM, then the leftmost affix is IO/BEN and the rightmost is DO.

The IO/BEN-DO order for interpretation mimics the neutrally-interpreted order for full DPs. In (8), where the subject is focused, BEN precedes DO in the unmarked order for the backgrounded arguments.

- 9a) U-ññil wawu bare gu-sen-e é-muse yai gu-mangu
CL-child CL.DEF only SM.3rd.PL-give-PFV CL-teacher CL.DEF CL-mango
‘Only the children gave mangoes to the teacher’
- b)??U-ffan wawu bare gu-ñañen-e ú-sugaten wawu su-ol.
CL-elder CL.DEF only SM.3rd.PL-save-PFV CL-poor CL-DEF CL-fish
‘Only the elders save fish for the poor.’

Based on (7a,b) and (9a,b), we tentatively make the following analytic assumption.

- 10) The order of interpretation for RCM and RFM, when both are present and represent arguments, is a transparent representation of their underlying complement position order. These assumptions will serve for the time being, on the assumption that RCM and RFM are in situ, to insure that the RFM and RCM are in the lowest part of the stem structurally, an analysis we revise in section 3, although we remain committed to (10).

Proceeding now subunit by subunit, the ‘innermost stem’ is identified as such because the IRM, REV and CAUS affixes can only attach to the root and not to each other.

- 11a) *gu-pos-en-o u-ññil
SM.3rd.PL-wash-CAUS-IRM CL-child

- 'They made the children wash.'
- b) *gu-pos-o-en u-ññil
SM.3rd.PL-wash-IRM-CAUS CL-child
- c) gu-gub-ul-or-e u-rilon wawu
SM.3rd.PL-turn-REV-RCM-PFV CL-pot CL.DEF
'They continuously uncovered the pots.'
- d) *n-a-gub-en-ul-e
RLS-SM.3rd.SG-turn-CAUS-REV-PFV

All other affixes follow the innermost stem and no other affix is banned from directly suffixing the root or the innermost stem (in the absence of any of the other ordered stems before it). For example, RCM and NEG can attach directly to the root or to the innermost stem.

- 12a) gu-tey-or
SM.3rd.PL-run-RCM
'They ran continuously' or 'They ran for each other'
- b) gu-tey-ut
SM.3rd.PL-run-NEG
'They did not run.'
- c) gu-tey-en-or
SM.3rd.PL-run-CAUS-RCM
'They made each other run'
- d) gu-tey-en-ut Maria
SM.3rd.PL-run-CAUS-NEG Maria
'They did not make Maria run'

The inner stem consists maximally of the innermost stem optionally followed by the RFM and RCM suffixes, where RFM and RCM can be in either order (and interpreted according to (8) when they correspond to arguments). The RFM and RCM can be repeated, and where the predicate will permit a plausible interpretation, there can be three of these affixes (although more than two of RFM/RCM is can be somewhat degraded).

- 13a) W-aare wawu gu-sal-or-oro
CL-woman CL.DEF SM.3P.PL-praise-RCM-RFM
'The women praise themselves simultaneously'
'The women praise themselves for the benefit of each other'
- b) W-aare wawu gu-sal-or-oro-or
CL-woman CL.DEF SM.3P.PL-praise-RCM-RFM-RCM
'The women praise themselves simultaneously/continuously for the benefit of each other'

All other suffixes follow those in the inner stem when inner stem affixes are present. As pointed out above, the inner stem is identifiable as a unit because in one form of verb reduplication, only the sequence of affixes in the inner stem is reduplicated and the duplicate appears to the right of the whole unreduplicated stem, as in (6c,d). We return to reduplication in the next section.

The outer stem comprises all of the remaining affixes except the OM(s). All the suffixes following the inner stem appear in fixed order relative to each other. Some affixes are incompatible with others, e.g., the so-called perfective (PFV) cannot co-occur with NEG and PFV cannot co-occur with an OM (although NEG and OM can co-occur). The OMs attach to the outer stem to form the outermost stem, as illustrated in (14).

- 14) n-a-sal-ol
RLS-SM.3rd.PL-praise-OM.3rd.SG

‘S/he praised him/her.’

An OM can climb out of an infinitive and affix to a matrix verb, and when it does it attaches to the outer stem of the matrix verb, a matter we will enter into in section 3. When the verb reduplication illustrated in (6c,d) applies, the RED unit attaches to the outermost stem (see section 3) or to any smaller unit in the absence of intervening affixes between smaller substem units and RED.

The prefixes of Eegimaa are plausibly outside of the outermost stem, but are still part of the morphological verb. When verbs are conjoined, the SM must be included.

15) gu-tiñ-e su-ol ni *(gu)-kkay
SM.3rd.PL-eat-PFV CL-fish and SM.3rd.PL-leave
‘They ate fish and left.’

The SM is in complementary distribution with the infinitive marker, which does not agree with the understood subject of the infinitive and which appears to be a noun class marker. Eegimaa has no tense marking affixes, so most of the interpretations that correspond to tense are associated with aspectual markers. The aspectual suffixes will be discussed mostly with respect to their ordering in the stem. There are also a variety of independent auxiliary morphemes indicating aspect and mood that we will not discuss, but it is notable that one such auxiliary, the invariant *pan*, denotes future tense. When *pan* precedes the main verb, it is uninflected, but the following main verb must have an SM corresponding to the subject, which suggests that SM is structurally lower than tense.

16) Woli pan ju-pos-o
PRN.1st.PL FUT SM.1st.PL-wash-IRM
‘We will wash’

As our analysis develops, some of the morphological subunits we have just proposed will be reanalyzed (and regrouped) in syntactic terms, but insofar as the model in (5) adequately captures regular features of affixation in Eegimaa, we have set the empirical bar for what any reanalysis of the stem subunits in Eegimaa must achieve. A less theoretical approach to Eegimaa verb stems might conclude at this point, insofar as their descriptive templates in (3) and (5) capture linear order and morphological grouping with limited appeal to structural relations and none to semantic composition, but this is where more theoretically-driven inquiry begins.

2.1.2 A compositional puzzle

For the most part, the order of morphemes in Eegimaa verb stems is fixed and can be successfully described along the lines of 2.1.1, but from a theoretical perspective, it is reasonable to ask if there is a principled reason why Eegimaa verb stems have the morphological order that they do. If we consider some proposals about the composition of clausal structure, largely based on empirical generalizations about adverb ordering, for example, the order of morphemes in Eegimaa is surprising in certain respects. In particular, Cinque (1999) (see also Rice, 2000), suggests that most, adverbial and all aspectual affixes are typically in structurally higher positions than markers for passive or causative. If we translate the positions of adverbs and auxiliaries to the distribution of affixes, we might expect, given our theoretical expectation described by (1), that verb affixes would align such that agreement, mood, tense, aspect and various high adverbials would be further from the verb root than affixes such as PASS. However, this is not what we see in Eegimaa. Although the absence of tense affixes in Eegimaa does not permit us to compare its position with PASS, and given that so-called PFV is incompatible with PASS, we are limited to examining the position of adverbial suffixes relative to PASS. As

indicated in (3) and illustrated in (17) and (18), both the FMR and HAB suffixes precede PASS, that is, they are closer to the root than PASS, contrary to expectation, at least if Cinque (1999) and Rice (2000) are on the right track (and we will assume they are).

17a) SM-root-FMR-PASS

Gu-sal-en-i'

SM.3rd.PL-praise-FMR-PASS

'They used to be praised.'

b) *SM-root-PASS-FMR

*Gu-sal-i'-en

SM.3rd.PL-praise-PASS-FMR

'They used to be praised.'

18a) SM-root-HAB-PASS

Gu-sal-e-i'-sal

SM.3rd.PL-praise-HAB-PASS-praise

'They are habitually praised.'

b) *SM-root-PASS-HAB

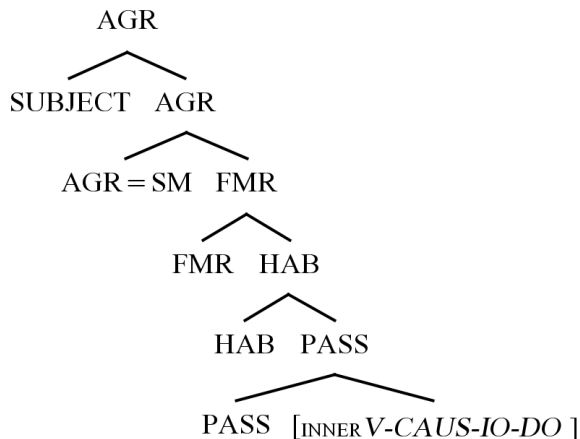
*Gu-sal-i'-e-sal

SM.3rd.PL-praise- PASS-HAB-praise

'They are habitually praised.'

More explicitly, the bolded portion schematically presented in (19) corresponds to the scopal hierarchy posited by Cinque and by Rice. The structure below PASS, which includes most of the structure related to argument relations are all at the bottom of the tree below PASS.¹⁴

19)



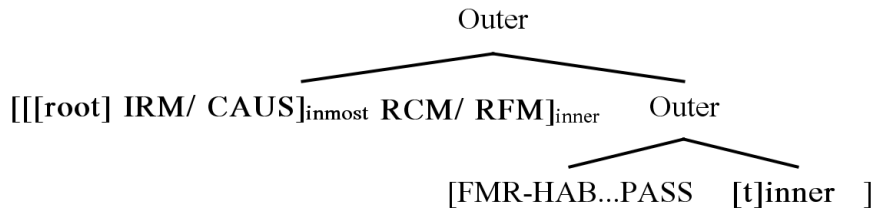
Eegimaa stem structure does not conform to the scopal schema in (19) because the italicized portion of the verb stem not only precedes FMR and HAB in Eegimaa, but PASS as well. This scopal anomaly is most typically visible when RFM or RCM=BEN. Recall that PASS is in complementary distribution with any OM, even one that is not the passivized argument, but RFM/RCM can be BEN when PASS is present. With these provisos, we can now posit what the morphological structure of Eegimaa verb stems ought to look like and how the morphological units of Eegimaa would have to be ordered if Eegimaa is to be consistent with Cinque's theory.

20) [[SM [FMR...PASS [**[Root] IRM/CAUS**]_{innermost} **RCM/RFM**]_{inner}]_{outer} (OM)]_{outmost}

¹⁴ In particular, we are assuming that CAUS is lower than PASS, which we do not justify here, but see Safir and Bassene where it is argued that Eegimaa CAUS is a form of v, not distinct from v. If v is distinct from PASS and below it, as argued by Harley (2013), for example, then PASS scopes CAUS in Eegimaa.

Setting aside the position of the OM, if (20) is the underlying hierarchical structure, consistent with the scopal schemas of Cinque and Rice, then the Eegimaa affix order in (3) must arise by displacement of the inner stem to the left boundary of the outer stem, as in (21).

21)



Inner stem movement illustrated in (21) allows us to posit an underlying order consistent with the scopal schema and at the same time derive the surface order, but there is additional striking evidence for such an operation. If inner stem movement (henceforth, ISM) is an instance of displacement couched in a minimalist approach, then it should be derived by internal Merge, that is, the inner stem is merged above the outer stem leaving a copy in the position from which it originates. In most cases, the lower copy is unpronounced when the fully formed stem is sent to the phonology, but if it were pronounced, along with the higher copy, then (20) provides a perfect model for the reduplication discussed in (6c,d).¹⁵ Further reduplication examples wherein the lower copy of ISM is pronounced are presented in (22b,d,f) (reduplicated stem in italics). Where HAB (22b) or PASS (22d,f) is reduplicated along with the inner stem, the result is ungrammatical.

22a) W-aare wawu gu-sal-en-oro-or-e¹⁶

CL-Women CL.DEF SM.3rd.PL-praise-REP-RFM-RCM-PFV

‘The women (habitually) repeatedly praise each other for themselves.’

b) W-aare wawu gu-sal-en-oro-or-e-*sal-en-oro-or*-(**e*)

CL-Women CL.DEF SM.3rd.PL-praise- REP- RFM-RCM-HAB-praise-CAUS-RFM-RCM -(**HAB*)

‘The women praised each other for themselves and they (really) repetitively and habitually did it.

c) W-aare wawu gu-sal-or-i’

CL-Women CL.DEF SM.3rd.PL-praise-RCM-PASS

‘The women were praised for each other.’

d) W-aare wawu gu-sal-or-i’-*sal-or*-(**i*)

CL-Women CL.DEF SM.3rd.PL-praise-RCM-PASS-praise-RCM-(**PASS*)

‘The women were really praised for each other.’

e) W-aare wawu gu-il-en-or-i’

CL-Women CL.DEF SM.3rd.PL-stand-CAUS-RCM-PASS

‘The women were made to make each other stand’

f) W-aare wawu gu-il-en-or-i’-*il-en-or*-(**i*)

CL-Women CL.DEF SM.3rd.PL-stand-CAUS-RCM-PASS-stand-CAUS-RCM-(**PASS*)

‘The women were really made to make each other stand’

¹⁵ For some phonological properties of this form of reduplication, see Bassene (2012:136-143).

¹⁶ Recall that PFV and HAB have the same shape, *-e*, but appear in different portions of the stem. We know that HAB is the only interpretation for *-e* in (12b) because PFV is incompatible with reduplication.

As indicated by (6d), if an OM is present, the inner stem copy (RED) is to the right of the OM(s), which means that the OM(s) must be structurally higher than the inner stem, but lower than FMR and HAB – an apparent departure from the model in (5) to which we will return. The key point, however, is that if the movement posited in (21) is modeled in strict minimalist terms, there are no traces, but only copies that may or may not be pronounced, depending on other factors. Reduplicated verbs are just cases where [t]_{inner} is the pronounced copy of the inner stem.¹⁷

We do require some sort of diacritic on *v* that will require the lower copy of the ISM to be spelled out in the morphology and this raises an issue not peculiar to our analysis. While we could endow the diacritic with an appropriate emphatic meaning, it does not appear appropriate because there is another use of reduplication that is not emphatic, but rather disambiguating. Since Eegimaa lacks past and present tense morphology, PFV is often used to achieve past tense readings, but PFV is not compatible with reduplication. That is why (22b) has the habitual reading unambiguously and does not have to be interpreted as emphatic (see also (2a)). We are not suggesting, as, e.g., Nunes (2004) proposes, that reduplication of this sort can only occur when the lower copy is disguised or altered in morphology, since the presence of reduplication must inform interpretation. However the significance of the reduplication is synchronically encoded in the derivation and/or recovered in the semantics, we do not currently see a better option, or one favoring another analysis, that introduces this diacritic elsewhere (e.g., as an emphatic head, for example).

Our basic displacement analysis resolves the puzzle concerning the apparent deviation from the scopal schema in (19) by appeal to ISM and predicts a pattern of reduplication that our research confirms.¹⁸ The reduplication of the inner stem described above is striking evidence in favor of the ISM hypothesis as couched within minimalist syntax copy theory. By comparison, if our description stopped at positing the templates in (3) and (5), the reason that inner stems in Eegimaa can reduplicate in final position would be unrelated to the scopal hypothesis that explains how Eegimaa speakers know what a verb means. As we move to justify the assumptions that support this analysis, a wider pattern of generalizations that support our proposal will emerge.

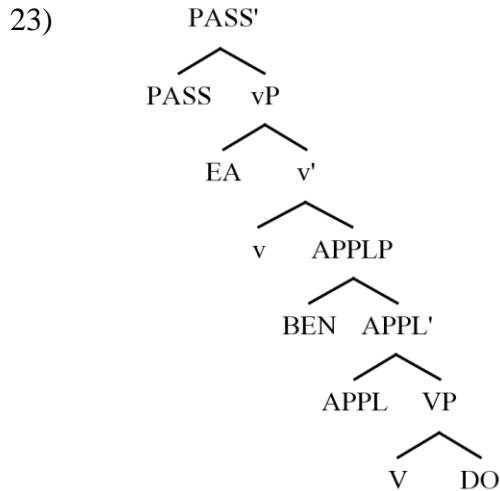
2.2.1 Developing the analysis in a theoretical context

So far, it has not been explained what the syntactic status of the inner stem is, why it should move, and where, exactly, it moves to. To clarify and expand our analysis, we introduce further assumptions that commit our account to a minimalist framework. We assume first that the structure of verb phrases includes both a root and a ‘little *v*’ that identifies the root as verbal (Marantz, 1997, Kratzer, 1996, Chomsky, 2000) and that can introduce the external argument (EA) of the verb, if there is one, in its specifier (using the term ‘specifier descriptively to refer to the non-terminal sister of the head plus its complement). We assume that BEN arguments are introduced by a ‘high applicative’ in Pykkänen’s (2008) sense, that is, there is a functional head APPL that takes the verb root and its complement as the APPL complement. We assume APPL is a null morpheme in Eegimaa, although it is visible in many other languages (including Atlantic languages, see, e.g., Hyman, 2007, Buell and Sy, 2006). The hierarchical order of BEN and DO

¹⁷ For other accounts that capture reduplication as copy spell-out (but for whole words or phrases), see, e.g., Nunes (2004), Kandybowicz (2007), and Bassong (2014).

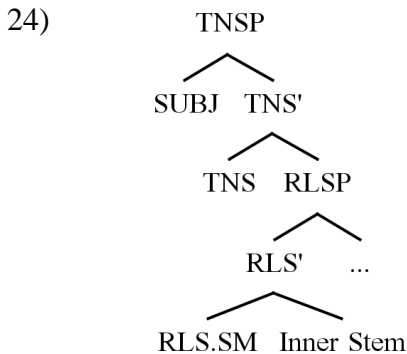
¹⁸ Rice (2000) informally proposes that in head-final Athapaskan, where the most deeply embedded prefix is the first one, that the verb Root, sometimes incorporating PASS, moves to the right so that the verb is final, rather than deeply embedded and initial. Her analysis is a precursor to ours, but Eegimaa is head initial.

arguments is underlyingly asymmetric, as established earlier (in (8)) and using Pylkkänen's structure, BEN c-commands DO. We assume that vP is a structural complement of PASS, that is, it is lower than PASS, with all the other affixes of the outmost stem are above PASS. The non-terminal nodes are named for their heads and bar levels are included for illustrative purposes only.



If we set aside CAUS for the moment, then the inner stem could be identified as vP, the highest v projection, such that when RFM and RCM both appear, they are assigned argument status consistent with their underlying positions, that is, if RFM is first, then it is BEN.

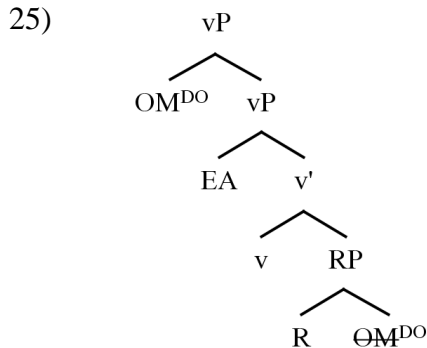
The target of ISM appears to be a position adjoined to SM, such that the root is adjacent to the SM, which is prefixed by RLS when the latter is overt. Eegimaa lacks tense affixes, but the future auxiliary *pan* precedes the verb+RLS-SM and follows the structural subject when a full DP subject is present, as in (16). Thus we assume that tense, when it is present at all, is structurally higher than SM, which we take to be hosted by the head RLS, which is irrealis in (16) and thus silent. The clause structure of a tensed sentence is schematically presented in (24).



ISM would appear to be movement that adjoins to the RLS head. This creates a tension in our account if we assume that the inner stem is phrasal, which would allow to assume RFM and RCM are in their base positions, but that would require adjoining a non-terminal to a terminal, an operation normally excluded. This suggests that the inner stem is a head, not a phrase, and so RFM and RCM must be part of that complex head, an issue to which we return.

We analyze OMs as clitics that must in some sense vacate the domain of v by adjoining to its outer edge, i.e., adjoining to vP (the highest v projection), as in (25) (where R=root and the

strikethrough indicates the copy left by movement that will not be pronounced).



Thus we take OM movement to be a form of clitic movement to the edge of a phrase, not a movement that targets a head position. We assume that the EA moves to a higher position in the clause always, perhaps to Spec RLS or Spec T, as is common in minimalist analysis, so it will never get in the way (the copy it leaves will be unpronounced). Thus copies of EA and OM are left in vP. If ISM is phrasal movement, then those copies would be part of what is spelled out in reduplication, contrary to fact. Moreover, when an argument of V is phrasal, as in (26a,b), or when an RFM representing a benefactive argument is present in addition to a full DP (27a), the ISM cannot include the DP argument or else PFV *-e-* would appear to the right of *Mary*.

26a) gu-sal-e Mary
 SM.3rd.PL-praise-PFV Mary
 ‘They praised Mary’

b) *gu-sal Mary-e

27) gu-sal-oro-e Mary
 SM.3rd.PL-praise-RFM-PFV Mary
 ‘They praised Mary for themselves.’ or
 ‘They praised themselves for Mary.’

Thus we conclude that ISM does not move a non-terminal v-node, but rather a complex v-head which is a conglomerate of affixes, and that the complex v head adjoins to RLS, skipping intermediate projections, if there are any, and leaving a complex v copy that can be pronounced in reduplication. Head movement skipping intermediate heads is a violation of the Head Movement Constraint (Travis, 1984), if the HMC is a principle of grammar. We concur, however, with Roberts (2010) who argues that the HMC is neither an axiom of the theory nor a corollary, as it is violated in just the way reported here – intervening heads can be skipped as long as the Phase Impenetrability Condition is respected, as it is in our analysis.¹⁹ By rejecting the HMC as a principle of grammar, we allow that head movement is free, but where there are patterns that respect the HMC, they should be derived from independent factors, as Roberts suggests.

What is needed is a way to move a complex v-stem that includes RFM and RCM within it while preserving the interpretive generalization in (8) with its origin in (10). Only the complex v copy will then be reduplicated, but without the OM(s) or their copies, which must not be a part of the complex v-stem when it moves.

¹⁹ For arguments that head adjunction must be countenanced as a possible form of head movement, see Safir (2010) who argues for a redefinition of Chomsky’s (1995) Extension Condition. See also Safir and Bassene (forthcoming).

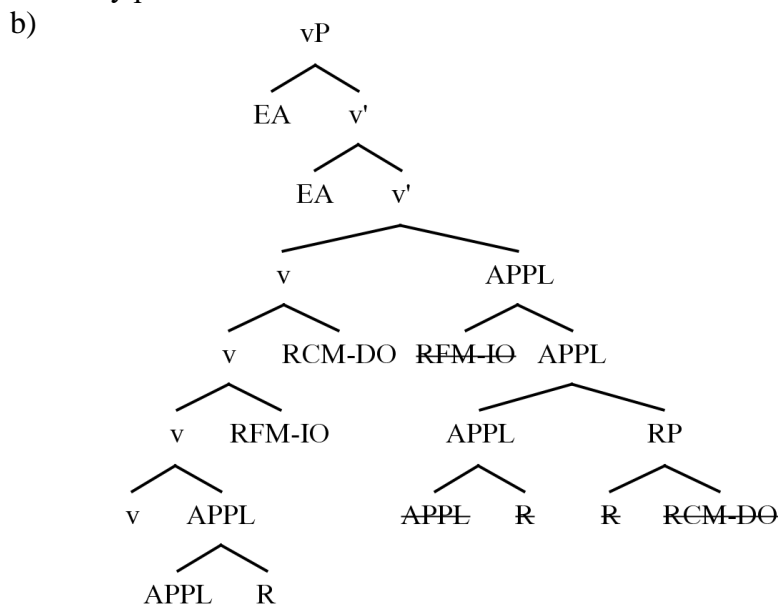
3.0 Argument suffixes

Given the ISM hypothesis, it must be the case that OM(s), which are stem final, are stranded by ISM, but RCM and RFM, if they do not inhabit the same position as full DP complements, must combine with complex v (the inner stem) before it raises to the SM position (or else immediately below it). We make the following assumptions about these affixes:

- 28a) OMs, RCM and RFM are argument suffixes that originate in thematic positions.
- b) OMs must adjoin to phrasal v (vP) by clitic movement.
- c) The inner stem without argument affixes is formed as [_v v root] or [_vv [_{APPL} APPL-root]].
- d) RFM and RCM must adjoin to (complex) v.
- e) Movement of argument affixes is restricted by “Shortest Move”.
- f) ISM is raising of a complex v head to RLS.

The difference between OMs and RFM/RCM is captured here in terms of what they attach to. Since RFM and the RCM attach to v, for whatever reason, they will move with the complex v when it undergoes ISM. The rest of the vP remains in place, including any DP arguments internal to vP, or the traces of OM cliticization. The formation of the inner stem including both RFM and RCM is illustrated in (29b) for the example in (29a), before ISM.

- 29a) gu-sal-oro-or-e
 RLS-SM.3rd.pl-praise-RFM-RCM-PFV
 ‘They praised each other for themselves.’
 *‘They praised themselves for each other.’



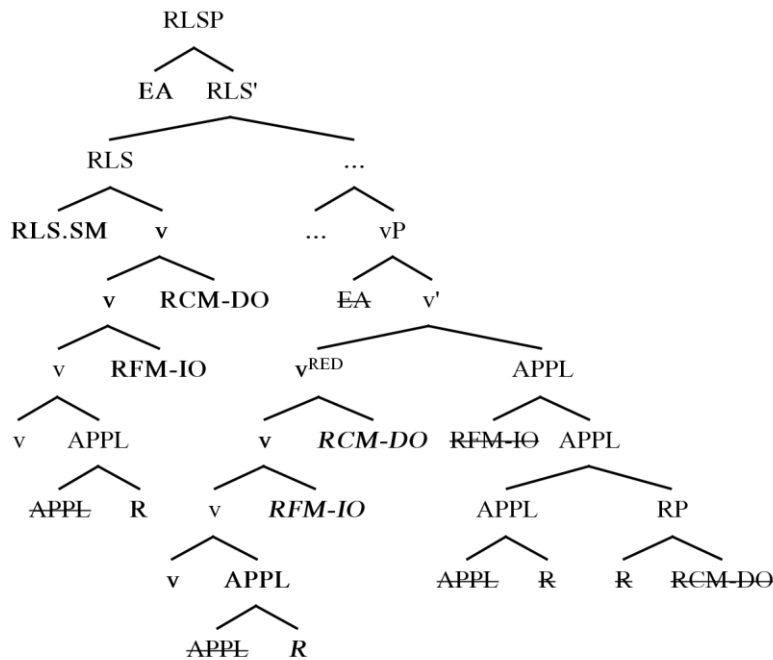
Since both v and APPL are abstract morphemes in Eegimaa, the formation of the complex v before argument affixation simply results in a pronounceable root, but affixation of the RFM and RCM complete the formation of the complex v.²⁰ We assume that [APPL R] adjoins to v before

²⁰ We do not have a principled explanation for why RFM and RCM do not act like OMs in terms of the landing sites they choose. Our best speculation is that the invariant status of RFM and RCM and their particular influence on the interpretation of the event described by the predicate require a more intimate relationship to v, whereas OMs do not change the nature of the event, but introduce distinct participants that are identified outside the description of the event. This distinction may only arise in languages where RFM or RCM are invariant affixes, and are perhaps rare or non-existent in languages where the form of RFM or RCM varies in person, number, gender or case (as in the Romance languages), where more OM-like behavior of RFM and RCM might be expected.

the argument affixes – a necessary stipulation at this point in our investigation that distinguishes heads on the verbal spine from heads corresponding to arguments. The complex *v* in (29) is thus fully formed and ready for ISM to RLS. Adverbial and aspectual nodes may be merged above *vP*, though we do not include them in this example. Since RLS is silent even in realis contexts unless it precedes SM that begins with a vowel, and since SM is a prefix, when complex *v* adjoins to RLS, the order SM-*v* is usually what will be spelled out. The copy of the inner stem dominated by the highest *v* does not contain any DP argument nor does it contain any OM or OM copy left by OM cliticization. The complex *v* copy left by ISM is just as in pre-ISM (29b), and it is that copy that correctly predicts the form of reduplication, as illustrated in the reduplicated version of (29a) in (30), where all the bolded elements are pronounced, including the reduplicants in italics. The (empty) nodes between RLS and *vP* (...) are where adverbial and aspectual affixes could appear, that is, they are nodes that do not reduplicate.

30a) gu-sal-oro-or-sal-oro-or

b)

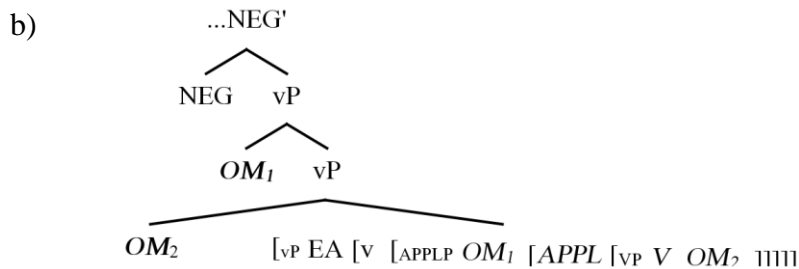


We are assuming sister nodes in syntax are not linearly ordered, so our choice of right or left adjunction in the diagrams presentationally anticipates what morphology will require, insofar as affixes are morphemes that must be linearly adjacent to their morphological hosts. From this perspective, headedness as final or initial would be a parameter of surface morphology, and head adjunctions forming sisters in the syntax would be realized in the morphology with the adjoined head to the right or left accordingly consistent with that parametric choice. Our analysis assumes Eegimaa is left-headed and so heads adjoined to by stems to their right would normally surface as prefixes, were it not for ISM, which raises complex *V*, causing stems to be built on at stem to the left. Cases where an affix contravenes headedness, that is, where a morpheme surfaces as a suffix though a prefix might be expected on the basis of headedness or the position of the root, will then require a diacritic on the affix visible to morphology. For a theoretical treatment of these matters, see Safir and Bassene (forthcoming). The requirement that RLS must be morphologically hosted by *v* means that RLS must be linearizable as adjacent to *v* based on the output from syntax. This will not be the case if RLS is only a sister to its complement (aspectual

or adverbial head). If the syntax fails to produce an output where RLS is a sister to *v*, then the derivation will crash in morphology. Thus morphological host selection of RLS is an indirect trigger for ISM – there is no trigger in the syntax, where all movement is optional (as in Safir, 2010 and Chomsky, 2013).

Notice also that our assumption (28e) is responsible for the order of the two argument affixations. In (30), the closest argument affix to *v* is RFM, so it adjoins first. The RCM is further away, so it adjoins second. Since they are both stipulated to be suffixes hosted by (complex) *v*, the lowest one in structure, structurally closer, will be morphologically linearized first and so will precede the outer one. As a result, the order of affixation reflects the hierarchical order of the argument positions that they come from. Thus the surface order of RFM and RCM will always predict which arguments they are linked to. Shortest Move also applies to OM clitics, producing the same order, but by slightly different reasoning. Consider (20) (where NEG is the outer stem suffix bordering *vP*).

- 31a) *gu-sal-ut-ul-óli*
 SM.3rd.PL-praise-NEG- OM.2nd.PL-OM.1st.PL
 ‘They did not praise us for you.’
 *‘They did not praise you for us.’



Since *OM*₁ is closer to *vP*, it moves first, and then *OM*₂ moves, since it has further to travel. Following Richards (1999), *OM*₂ ‘tucks in’ under *OM*₁, since it is going only as far as it needs to escape the *vP* including EA. The OMs are suffixed to a structurally higher morphological verb stem to the left of *vP* (see fn.26), so the highest OM will affix first, then the next highest one. Thus, when there are two OMs, the leftmost OM is always BEN/IO and the second one is DO. This turns out to be true only when the two affixes have equal rank on the person/human/plural hierarchy, which orders successive OMs according to the following rankings.

- 32) Multiple OM Ordering: Multiple OMs can occur in any order unless the following linear ordering restrictions obtain:
- OMs corresponding to humans must precede non-human OMs
 - OMs corresponding to animates must precede inanimate OMs
 - Local person OMs must precede third person OMs
 - Plural OMs precede singulars unless (a-c) determine precedence.

When the ordering is determined by the hierarchy in (32), then which of the two OMs is BEN/IO and which is DO is opaque – not determined by syntax, so examples like (33) are ambiguous (and the context of speech will often favor one interpretation over the other).²¹ When the two

²¹ The elicitation of judgments of this kind requires careful controls because the choice of predicate and subject matter may strongly favor one reading over another. Care must be taken to select predicates for which a scenario can be provided in which the interpretation to be tested is plausible and salient. When such controls are in place and speakers still reject the interpretation as one allowed for the sentence in question, then we mark that interpretation

OMs have the same rank as in (34) the first must be BEN/IO and the second DO regardless of context.

- 33) gu-xur-ul-o(l)
 SM.3rd.PL-nurture-OM.1st.PL-OM.3rd.SG
 ‘They nurtured him/her for us.’
 ‘They nurtured us for him/her.’

- 34)) gu-xur-óli-ul
 SM.3rd.PL-nurture-OM.1st.PL-OM.2nd.PL
 ‘They nurtured you for us.’
 *‘They nurtured us for you.’

In Safir and Bassene (forthcoming), it is argued that the rigid order imposed by the ranking hierarchy obscures two possible underlying structures, one corresponding to each of the two possible interpretations (i.e., one where what would have been the first affix has been reordered to be second), but we omit supporting evidence here for reasons of space.²² Note, however, that the systematic phenomenon under investigation, rigid order and ambiguous interpretation and optional order and unambiguous interpretation, would be invisible without elicited judgments that detect what is not possible (an opportunity only available while there are still native speakers). Moreover, our theoretical motivation to account for the preservation of underlying thematic relations for optionally ordered argument affixes is what led us to discover this pattern.

Our proposal that argument affixes attach to the complex *v* later than other affixes is theoretically motivated by comparison with clitic pronoun movement in, for example, the Romance languages. Pursuing that parallel, we were led to inquire if Eegimaa would allow climbing effects, like those seen in Romance, where the argument clitic of a lower verb appears on a matrix verb stem or auxiliary. Argument affix climbing is indeed attested in Eegimaa. Both OMs and RFM/RCM affixes can attach to the matrix verb rather than to an infinitive verb where their argument linking originates. Climbing, illustrated for RCM in (35a) and OM in 35b), is optional.

- 35a) gu-mang-or e-sal (Raised RCM)
 SM.3rd.PL-want-RCM CL-praise
 ‘They want/ed to praise each other.’
 b) gu-mang-ol e-sal (Raised OM)
 SM.3rd.PL-want-OM.3rd.SG CL-praise
 ‘They want/ed to praise him/her.’
 c) gu-mang-or-ol e-sal (Raised RCM OM)
 SM.3rd.PL-want-RCM-OM.3rd.SG CL-praise
 ‘They want/ed to praise him/her for each other’
 ‘They want/ed to praise each other for him/her’
 ‘They want/ed to praise him/her simultaneously/continuously/together’²³

It is tempting to identify affix-climbing in Eegimaa with the restructuring phenomena that have been proposed for Romance languages, amongst others (see, for example, Wurmbrand, 2000),

with a star. If data collection were limited to spontaneous speech or corpora (and only the researcher’s assumptions about what was meant), it is unlikely that any such systematic effects would be uncovered.

²² See Safir and Bassene (forthcoming) for OM co-occurring with RFM/RCM and cases of triple argument affix combinations, where they are possible. For a syntactic approach to the person/animacy orderings, see Baker and Safir (2013).

²³ The third translation exploits the adverbial readings possible for RCM, which we do not comment on here for reasons of space. See Safir and Bassene (forthcoming).

but besides the fact that it is optional, unlike the Romance cases, it also differs from Romance in that it does not appear sensitive to the choice of matrix verb. Most matrix verbs that take infinitives permit affix raising, including, *ppáden* ‘fail’, *ban* ‘finish’, *ñag* ‘avoid’, *ssu* ‘be ashamed’, *wosen* ‘remember’, *pinor* when it means ‘consider doing something’, *yangen* ‘yell’, *fir-en* ‘prevent’, *xal* ‘stop’, *jju* ‘start’ and *ñum* ‘might’. Thus it does not appear that affix raising is limited to aspectual or modal verbs. On the other hand, the infinitival complement would appear to be smaller than a CP, as in Wurmbrand’s approach, for example, but it still must be a vP on our account if the affixations that target v can target the infinitive, which they can (and ISM also is found in infinitives).

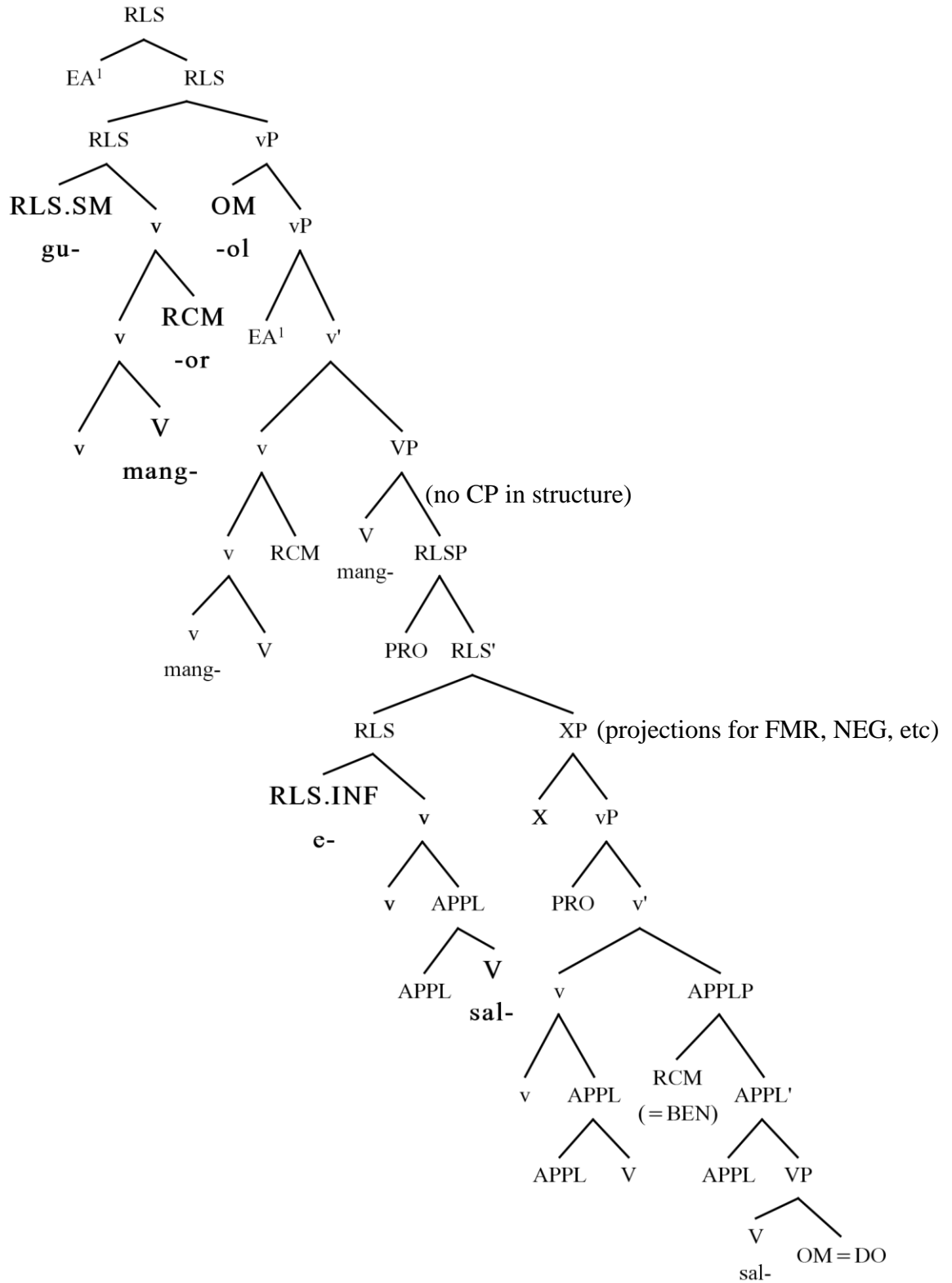
We propose that infinitive v can optionally be ignored as the target of argument affixation and infinitive vPs are also optionally ignored as a target for OM cliticization. We do not commit here to a particular mechanism to permit the local domain (a vP phase under minimalist assumptions) to be ignored (see Safir and Bassene, forthcoming, for a proposal), but if we make this assumption, the climbing facts follow.²⁴ Moreover, it is possible to reduplicate a matrix verb that bears clitics that have climbed out of an infinitive, and the matrix verb behaves exactly as if inner stem formation with subordinate verb affixes has applied to it directly, as illustrated in (36a,b) where the inner stem, whether it includes raised RCM or not, reduplicates (marked with italics), but raised OM never does.

- 36a) *gu-mang-ol-mang* e-sal
 SM.3rd.PL-want-OM.3rd.SG-want INF-praise
 ‘They really want/ed to praise him/her.’
- b) *gu-mang-or-ol-mang-or* e-sal
 SM.3rd.PL-want-RCM-OM.3rd.SG-want-RCM INF-praise
 ‘They really want to praise each other for him/her.’ or
 ‘They really want to praise him/her for each other.’

The structure that results for (36b), for example, is illustrated in (37).

²⁴ It is possible, for example, that the adjunctions to vP are cyclic and that in the absence of a C phase, the OMs adjoined to vP are visible in the higher v phase. It is not clear how this would apply to RCM and RFM, however. A reviewer suggests that “perhaps infinitives are systematically ambiguous in Eegimaa between a vP containing structure and a non-vP structure. When the infinitive has a vP, the clitic attaches to that vP and stays low. If the infinitive lacks a vP, then the clitic must attach to the matrix vP, yielding the climbing effect.” This is also possible, but our analysis takes ISM to target v or complex v, and since the same operation applies to infinitives, our analysis requires v to be present.

37)



Notice that ISM applies to both the matrix and subordinate verbs, but in the subordinate clause the form of the RLS head is INF (probably a noun class marker) and INF effectively prefixes the

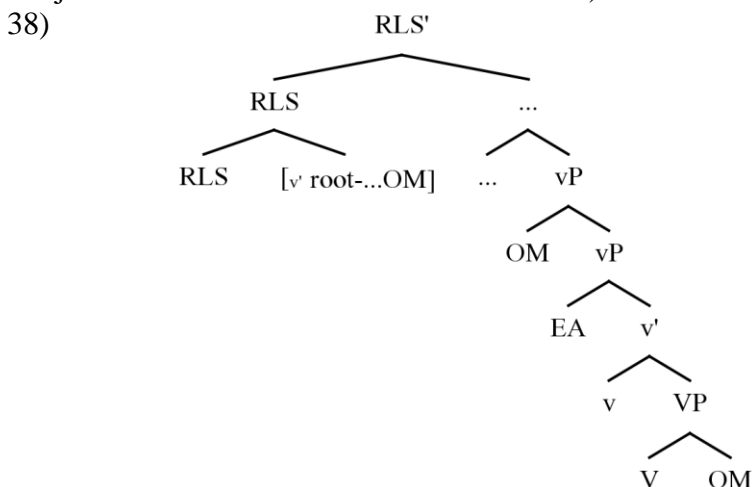
complex *v*.²⁵ The matrix complex *v*, targeted by RCM directly out of the infinitive verb's argument structure, also undergoes ISM, leaving a copy of the complex *v* [*mang-or*] which can be reduplicated. The OM originating in the lower clause has adjoined to the higher *vP* and is stranded there by ISM. It is hard to imagine another systematic account that could feed long distance affix movement into the formation of verb stems so as to permit the reduplication pattern to be predicted as it is here.

At this point we have explained how the ISM analysis solves the compositional anomaly of affix order in Eegimaa verb stems, we have explained why OMs are stem final, we have accounted for the reduplication patterns that include RCM/RCM but not OMs, and we have also accounted for the argument-linking interpretations that emerge when more than one OM is present, as well as those for co-occurrences of RCM/RCM in a single stem. We have successfully extended our analysis to account for affix climbing and the reduplication patterns that emerge there. If we are right, we have uncovered something striking about how Eegimaa speakers employ what they know.

4.0 This analysis, as opposed to others

Due to limitations of space, we cannot give a full justification for our choice of this theoretical approach and its analytic commitments, but we can briefly explain why we have taken this tack as opposed to others proposed in the literature.

For example, it has been often suggested to us that ISM is phrasal movement, a form of remnant movement, perhaps in contrast to the other head movements we propose, and that this is the reason that the Head Movement Constraint is violated in just that case (since intervening aspectual heads are skipped over by the complex *v* targeting RLS). On a version of this analysis, OMs would vacate the *vP*, as in our analysis, but what moves to RLS is then the *vP*, or even in the best case for this theory, the *v'* (so that the copy of EA ,raised to subject position, and the OM adjoined to *vP* are not also in the inner stem).



Apart from adjunction of a phrase to a head, the immediate problem with this approach is that *v'* would not define the right domain for reduplication because the copies of the OM would spell

²⁵ The analysis can be extended to agentive nominals, where ISM targets the position of the noun class marker, which acts as a noun prefix. The Agentive marker (AGT) *-a* appears roughly where PASS would in a verb and it is followed by OMs, if there are any. Essentially the same interpretive properties hold of RCM and RCM affixes, which move with the inner stem, stranding structurally higher affixes, including AGT and OMs.

out if, to accommodate the *v'* analysis, the diacritic we propose to introduce on *v* is somehow introduced on *v'* instead. Something special would have to be added to rule out reduplication of the OM, in contrast to the RCM and RFM, which leave copies that do reduplicate. Our analysis that treats ISM as complex *v* movement distinguishes OMs from RFM and RCM in just the right way – only complex *v* is reduplicated, not the whole *vP*. Similar issues arise for full argument DP complements. Full argument DP complements occur after the verb in the order IO>BEN in neutral contexts. If the *vP* were raising to SM, then both IO and BEN would have to be extracted first, but then would also be expected reduplicants when the lower *vP* is reduplicated. However, if an OM=DO appears with a full DP complement, the OM must precede the IO even in neutral contexts, so the landing sites for OM and DP extraction would have to be different, complicating the analysis.

Another possibility suggested to us by reviewers and others is that inner stem movements and perhaps the whole range of movements we propose could be post-syntactic, occurring in a component isolated from interpretive effects, as in some versions of Distributed Morphology (DM) (Embick and Noyer, 2001). If such an option were taken, the diacritic on *v* that triggers spell-out of a lower copy of complex *v*, which must be present for interpretation, might also be thought of as a trigger for ISM as post-syntactic movement. Although we are committed to some post-syntactic morphological operations, such as the spelling out of the reduplication induced by the diacritic on *v*, or the realization of affixes as suffixes or prefixes, as well as a morphological metathesis rule that enforces the person/animacy/plural hierarchy, none of these operations duplicate the effects of upward movement (and the morphological metathesis is formulated to insure locality based on adjacency in Safir and Bassene, forthcoming). On theoretical grounds, adding movement to the morphological component seems drastic if the same effects can be achieved with a movement operation independently motivated within syntax.²⁶ Challenges remain for any account of what motivates all of the movements, a matter that our future work will address, but our current position is that at least upward post-syntactic movement is not necessary to our account and excluding it is both theoretically preferable and likely to be more learnable (i.e., a learner does not have to choose between pre- vs. post-syntactic movement as a possible analysis of a particular phenomenon). In light of these considerations, post-syntactic movement does not seem to be the right approach.

We have not yet, however, accounted for the presence of CAUS in the inner stem, which appears anomalous if *v* introduces the EA of a verb root (*V*) and CAUS introduces an argument that is higher than the EA of *V*. For CAUS to be structurally higher than *v*, we must assume that [*v V*] adjoins to CAUS, extending the phase, before the other affix-movements take place, which introduces a stipulation into our analysis about timing. Since CAUS must be hosted by a root and *v* is null, only this sequence will satisfy its morphological requirements. A DM analysis might achieve this by post-syntactic lowering (not possible in syntax, so not redundant) and it is an open question which approach is better. An alternative approach is pursued in Safir and Bassene (forthcoming), where it is posited that CAUS in Eegimaa is a form of *v*, and as such is below PASS, which is higher than and distinct from *v*, as remarked earlier..

²⁶ Requirements of certain morphemes to be in proximity to morphological hosts may conflict with the position in which they receive compositional interpretation. Post-syntactic movement was proposed to solve such problems. If however, movement (internal Merge) is always optional (untriggered), but the output must satisfy morphological hosting and semantic selectional requirements, as in Safir (2010) and Chomsky (2013), then appeal to (upward) movement in morphology is unnecessary, as argued in Safir and Bassene (forthcoming).

Whether we are right or wrong to choose the analysis that we do, the best way to settle the matter is more precise empirical inquiry. Our attempt to understand why OMs are stem final required us to assume a movement analysis and the movement analysis predicted unambiguous interpretations. Once we discovered and controlled for the hierarchical effects inducing rigid orders and ambiguous interpretations, the unambiguous structures predicted by Shortest Move then were evident. It is hard to imagine how such a pattern would have been discovered if our research was not driven by theoretical inquiry.

5.0 Conclusion

Our investigation of verb stem structure in Eegimaa has led us to treat both non-harmonic morphology (in the sense of (1)) as arising principally from syntactic movement of sub-stem morphemes in a way that preserves the underlying structure that is necessary for compositional interpretation (particularly thematic and scopal relations) but explains otherwise unexpected surface linear orders. The set of movements we propose, particularly ISM, predicts that a copy of complex *v* movement will be left that has just the right contents to predict the patterns of possible and impossible reduplication. Without the theoretical conundrum raised by the absence of harmony between linear order and interpretation, we would not have been led to link reduplication to the scopal anomaly, or to explain the position of OMs or the ordering of OMs and RFM/RCM, and the link between those orderings (underlying order preserved by Shortest Move). An atheoretical approach that would have been satisfied with the description in 2.1 would not have captured the organizational principles that explain what Eegimaa speakers know.

As noted at the outset, our approach to understanding the grammar of Eegimaa is not methodologically different in this respect from the approach we would use to unravel it if Eegimaa were a dominant language, and so extension of our analysis to other languages does not discriminate between endangered and un-endangered languages.²⁷ This is not a shortcoming, as there is no reason to analyze rare plants with a different botanical methodology from that we use for common ones if the structure of the plant is not a function of its rarity. This is an investigation we must perform if we are to understand what we have lost should that plant go extinct. Crucially, however, if we are to understand and in some small way preserve what it is that Eegimaa speakers know, we must at least do our best to understand the underlying system they employ to dynamically generate the interpretations that they associate with every verb they utter. We hope our essay contributes to this understanding.

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²⁷ We omit attempts to extend our approach to other languages for reasons of space, but the matter is taken up in Safir and Bassene (forthcoming).

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APPENDIX – Glosses and Abbreviations

- AGT – agent
- APPL - applicative
- BEN – benefactive argument
- CAUS - causative
- CL – noun class marker
- CPL – centripetal
- DEF – definite
- DM – Distributed Morphology (theory)
- DO – direct object argument
- EA – external argument
- FMR – former
- FUT - future
- HAB – habitual
- HMC – Head Movement Constraint
- INF - infinitive
- IO – indirect object argument
- IRM – inherent reflexive
- ISM – internal stem movement (operation)
- LOC - locative
- NEG – negative
- OM – object marker
- PASS – passive
- PFV - perfective
- PL – plural
- PRN - pronoun
- RCM – reciprocal marker (but it has other meanings)
- RED – reduplicated stem
- REP - repetitive
- REV – reversative
- RFM – reflexive marker
- RLS – realis
- SG – singular
- SM – subject marker
- SVO – subject-verb-object (word order)