Morphosyntax and Movement: Verb Stems in Jóola Eegimaa

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1.0 Introduction[*]

The agglutinative morphology of verb stems poses many problems for theory and analysis, insofar as distinct theoretical commitments as to what counts as a linguistic unit do not always align. The verb stem morphology of Jóola-Eegimaa (Eegimaa, henceforth), an Atlantic language of the Niger-Congo family, poses just such a challenge.[1] 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. Insofar as our analysis is successful, it has implications for the copy theory of internal merge, for the typology of head movement, for the role of syntax in the derivation of words before surface morphological operations, for the nature of surface morphological operations, and for the compositional and de-compositional analyses and interpretation of the verbal spine. In particular, we make an existence argument for a form of stem-internal long head movement that any revealing analysis of Eegimaa verb stem structure will require. If our approach is successful, it avoids appeal to post-syntactic movement or other post-syntactic operations that change structure, insofar as they duplicate operations available in the syntactic component.

A fully 'harmonic' relation holding between the linguistic sub-units of the 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 suffixes, but the same assumptions would apply if they were prefixes. (1) corresponds to half of what Baker (1985) calls the 'Mirror Principle'.[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.

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[1] Eegimaa belongs to a group of Atlantic (Niger-Congo) languages known as Bak languages. These languages are spoken in the southern part of Senegal and also in the neighboring countries of Gambia and Guinea Bissau. The data upon which our study is based was collected through months of elicitation with native speakers by Mamadou Bassene primarily, with and his uncles Louis Eketubo Bassene and Rene Bassene, and his cousin Noel Bassene, who we would like to take this opportunity to thank. Mamadou Bassene also reports his own judgments. Most of the data included in this paper and much more besides is freely available in the Afranaph Database (Ongoing).

[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 a syntactic operation. The latter assumption is not made here and not explored.

Eegimaa verb stems depart from the ideal in (1) in the following ways: Linear order is insufficient to predict what counts as a structural unit, processes that isolate morphological units permit some structural relations to be posited, while others are underdetermined and neither linear order nor the isolation of morphological units is sufficient to explain how interpretations are composed.

The heart of our proposal is that movement of sub-stem units within a verb stem disguise an underlying harmony of structure and interpretation. Using a minimalist approach to structure-building, we posit 'inner stem' movement and object marker movement to explain robust regularities of form and interpretation in Eegimaa that do not face the pitfalls that other imaginable approaches, such as phrasal accounts of head movement, would be prone to.

Our focus throughout is on what an explanatory theory of Eegimaa stem phenomena requires of linguistic theory. In section 2 we describe a puzzle posed by the Eegimaa data, whereby material distant from the stem should be compositionally closer to it. We address this puzzle by proposing that a (sometimes large) portion of the verb stem, the 'inner stem', is reordered by syntactic movement. We then sketch our movement proposal and show how the movement analysis also provides a natural and explanatory account of the intricate reduplication structures that are found in Eegimaa. Section 3 considers how the portion of the stem that undergoes movement is itself constructed, and in particular, addresses the difference between the position and interpretation of reflexive and reciprocal markers, which are in the part of the stem that moves, and object markers, which are external to the part that moves. We propose that movement of affixal argument markers, which is one of the mechanisms that constructs the verb stems that underlie reduplication, has the added virtue of accounting for the range of interpretations that argument affix combinations are permitted or forbidden to have. Section 4 shows that affix-climbing phenomena, used to support our approach in section 3, can be integrated into our analysis with minimal adjustments, once a restructuring approach to infinitival complementation is adopted. In section 5 we examine some adverbial (non-argument) readings that are possible for the reflexive and reciprocal markers and the challenge these phenomena pose for a portion of our analysis is evaluated. Section 6 outlines the theoretical commitments that make the analysis possible while confining linearization to the morphological component and yet avoiding appeal to post-syntactic movement. We then conclude.

2.0 Stem affix ordering and inner stem movement[3]
Before any explanatory account is possible, it is necessary to understand 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. We provide this foundation in 2.1. The existence of a 'scope anomaly' 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, and though there is no full agreement about how many

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[3] An earlier version of section 2.1 appears in Bassene and Safir (to appear).

noun classes there are,[4] it is notable that singulars and plurals of a given noun are in different classes, much as in Bantu systems.[5] The language is SVO and pro-drop, in that the subject agreement marker (SM) suffices to saturate the subject of finite clauses. 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). Human singular SMs (1st, 2nd and 3rd person) are sometimes preceded by a prefix *n-* which we take to be a realis marker, as will be discussed in section 2.2.

Most of our attention, however, is focused on the distribution of verb suffixes, of which there are many (see the Appendix for all the glosses and initials used). The causative (CAUS) – *en*, repetitive (REP) –*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 which can appear more than once on a stem. RFM and RCM also can appear in either order, a matter for much discussion below. The order of the remaining affixes is fixed. These include – *ali*, 'early' (ERL) (discussion postponed until section 5), 'former' (FMR) -*en*,[8] locative (LOC) – *ul* and centripetal (CPL) –*ulo*,[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 paradigm (OMs do not distinguish between masculine and feminine).[11]

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[4] See in particular Sagna (2008, 2010) and Bassene (2012).

[5] Although accents appear in the name Jóola Eegimaa and in some examples, Eegimaa is not a tone language. The accents mark triggers for [ATR] harmony. There is no agreed-upon spelling for the language, but there is a consensus amongst Eegimaa scholars.

[6] See the discussion of CAUS and REP in sections 3.5.2 and 5.

[7] We call this marker 'RCM' as a matter of descriptive convenience, but it has other meanings that we will discuss in section 5. We make no assumption that the reciprocal reading is primary or that any one of these readings must derive from one of the others, though that may be the case for some of the readings. See section 5.

[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. *'Nihi gutiñentiñ suol', 'They used to eat fish'.* Sagna (2008:108) describes it as 'inactualis'. Its position on the stem is different than CAUS and it is possible for CAUS and FMR to co-occur, as in (9a). We choose not to gloss it as past habitual in verbal contexts so as not to lose the relationship to the nominal form and because the affix is glossed as FMR in other work.

[9] A.-C. Bassene (2007: 69-70) describes this affix as 'centripète', meaning that it describes an action moving toward the speaker. It is possible that the affix is a combination of LOC+CPL, where the CPL is just directional –*o*. The –*o* portion though phonologically similar to IRM, is in a different position within the stem. IRM and the centripetal can co-occur.

   i. gu-ssim-o-ul-o
     SM.3rd.pl-dress-IRM-LOC-CPL
   'They got dressed and came. '

[10] We are calling this affix perfective, and though it does appear to contribute that meaning in many cases, it also appears in sentences where the verb is not interpreted as perfective. We designate this affix PFV as a matter of descriptive convenience, but we do so with the caveat that later analysis may suggest a different gloss. A.-C. Bassene (2007) glosses the same affix as a tense-aspect marker (TAM), but its meaning remains unclear.

[11] The glosses used throughout this paper are the Afranaph Project (Ongoing) glosses

(2) Object Markers in Eegimaa[12]

	1st	2nd	3rd animate	3rd inanimate
Singular	-om	-i	-ol	-so
Plural	-ul	-oli	-il	-so

It is possible to have more than one OM, either for double object verbs, or when benefactive arguments are added to transitive verbs or causativized intransitives, and in these cases the order of the OM is fixed for some combinations, and variable for others. The OM is normally in complementary distribution with an overt direct object (DO) if the two would share the same thematic role[13] and the same is true with an OM and a corresponding indirect object (IO) or benefactive argument (BEN). The OM paradigm is the same for DO, IO and BEN.

The following sequence of verb suffix sequences shows variable (either) order with a comma and non-co-occurrence is marked a tilde.[14]

(3) Root>CAUS~REP~IRM~REV >RCM, RFM> FMR>LOC>CPL>HAB>
     NEG>ICV>PFV>PASS>OM, OM

PFV also cannot co-occur with NEG, PASS or an OM and PASS cannot normally[15] co-occur

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(http://www.africananaphora.rutgers.edu/glossing-conventions-mainmenu-186) which diverge from the Leipzig Glossing Conventions only where are not available for certain kinds of morphemes, they are not specific enough for certain kinds of distinctions, or they are not distinct enough to allow for optimal searches in the database. The glosses that are not on the Leipzig list include AGT (agent or agentive), CL (noun class, where the noun class distinction is not specified), CPL (centripetal), ERL (early), FMR (former), HUM and NONHUM (human and non-human, where this distinction matters for the point under discussion), ICV (inclusive where 1st or 2nd is plural), IRM (inherent reflexive marker where this form has a distinct exponent), OM (object marker that shows person number and noun class on the verb – we use 'marker' to avoid prejudging this morpheme as a clitic or agreement marker) RCM (reciprocal marker when it is a verbal affix), REP (repetitive), REV (reversative), RFM (reflexive marker when it is a verbal affix), RLS (realis, where a language, like Eegimaa, has an exponent for realis, but not one for irrealis), SM (subject marker, which does not prejudge the marker as either clitic or subject agreement). All of the other glosses are Leipzig glosses, including APPL (noted in trees, not glosses, because it is morphologically null in Eegimaa) CAUS (causative), DEF (definite), HAB (habitual), INF (infinitive), LOC (locative), NEG (negation), PASS (passive), pl (plural) and sg (singular). The acronyms BEN (benefactive), DO (direct object), EA (external argument) and IO (indirect object) are not glosses but refer to different thematic arguments of predicates.

[12] Our orthography reflects the current (unofficial) Eegimaa spelling used by scholars and is without phonetic symbols. We only use OMs from one inanimate noun class for convenience of presentation. For the full range of forms, including 1st inclusive/exclusive distinctions and phonetic orthography, see Bassene (2012).

[13] Co-occurrence of a full direct object with an OM is not possible in postverbal position, even for a dislocated reading, but the full DP and the OM can co-occur with a dislocated reading when the DP is sentence initial.

i.   *nu-lluj-a-il   ú-pur   wawu
      RLS.SM.1st.pl-watch-ICV-OM.3rd.pl   CL-boys   CL.DEF
      'We watch them, the boys.'

ii.   ú-pur   wawu   nu-lluj-a-il
      CL-boys   CL.DEF   RLS.SM.1st.pl-watch-ICV-OM.3rd.pl
      'The boys, we watch them.'

[14] Sources for more information about the suffixes include A.C. Bassene (2007), Sagna (2008) and Bassene (2012).

[15] We have recently learned that non-human OMs can sometimes co-occur with PASS, and in such cases, there is an odd agreement pattern that we do not understand insofar as both the OM and SM must be 3rd plural and the OM that is possible in i. is non-human. Such examples do show, however, that OMs are ordered after all outer stem affixes, of which PASS is the rightmost.

i.   Na-jog-i'-so

with any OM. Although examples throughout the paper will confirm the order in (3) and some of the incompatibilities, we provide a few illustrative examples below that may not otherwise come up, including the allomorphy of NEG after HAB, e.g., (4d) vs. (4b) (RLS in (4a) is 'realis').

(4)   a. n-u-lluj-a-il
          RLS-1st.pl-watch-ICV-OM.3rd.pl
          'We (inclusive) watch them.'
       b. e-sodali   yai   gu-jow-ul-at
          CL-soldier   CL.DEF   SM.3rd.pl-walk-LOC-NEG
         'The soldiers did not come.'
       c. u-wañ-a   wawu   gu-pos-o-ul-o
          CL-cultivate-AGT   CL.DEF   SM.3rd.pl-wash-IRM-LOC-CPL.
          'The cultivators washed and came back.'
       d. gu-bukko-e-rit,
          SM.3rd.pl-injure-HAB-NEG
         'They do not habitually injure themselves'
       e. a-jug-en-ut   w-aare   wawu
          SM.3rd.sg-see-FMR-NEG   CL-woman   CL.DEF
          'They had not seen the women.'
       f. U-sal-ut-al   gu-ppal-ol
          SM.1ST .praise-NEG-ICV   CL-friend-3rd.POSS
          'We did not praise his/her friends.'
       g. Nu-sal-en-al-e   w-áine wawu   min   gu-box
          SM.1st.pl-praise-REP-ICV-PFV   CL-man CL.DEF   COMP SM.3rd.pl-dance
          'We praised the men continuously and/ (so that) they danced.'
       h. Wola   u-teg-ut-a-i'
          PRN.1st.ICV   SM.1st.pl-beat-NEG-ICV-PASS

Insertion of PFV –*e* after LOC in (4b), HAB in (4d), or FMR in (4e) is excluded because of incompatibility with NEG.

Benefactive 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 and virtually any verb can have a benefactive argument in addition to the arguments the verb selects. We reserve discussion of the null applicative (APPL) affix we posit for section 3.

2.1.1 Apparent morphological sub-stem units

It is possible to 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 descriptive schema produced below. Several affixes left out for the purposes of presentation, the whole inner stem is bolded (also PFV and OM do not co-occur).

(5)   RLS.SM [[[**[[[Root] IRM~CAUS~REV]innermost RCM, RFM]inner**
       FMR…PASS~PFV]outer OM] outermost reduplicated stem]

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          SM.3rd.pl-catch-PASS-OM.3rd.pl
          'S/he was caught for them.'
          'S/he caught for him/her.'

Although we shall show that (5) does not accurately reflect underlying compositional structure or surface syntactic structure, the groupings presented in (5) are distinguishable by various criteria.

The 'innermost stem' is identified as such because the IRM, REP, REV and CAUS affixes can only attach to the root and not to each other (for REP see 3.5.2).

(6)   a. u-ññil gu-pos-e
        CL-child SM.3rd.pl-wash-IRM-PFV
        'The children washed.

        b.*gu-pos-en-o   u-ññil
         SM.3rd.pl-wash-CAUS-IRM   CL-child
         'They made the children wash.'

        c. *gu-pos-o-en   u-ññil
         SM.3rd.pl-wash- IRM-CAUS   CL-child
         'They made the children wash.'

        d. na-gub-ul-e   ga-riloŋ   gagu
         RLS.SM.3rd.SG-turn-REV-PFV   CL-pot   CL.DEF
         'S/he uncovered the pot.'

        e. na-gub-en-e   ga-riloŋ   gagu
         RLS.SM.3rd.SG-turn-CAUS-PFV CL-pot   CL.DEF
         'S/he covered the pot.'   Lit: S/he caused the pot to be covered.

        f. *na-gub-en-ul-e   ga-riloŋ   gagu
         RLS.SM.3rd.SG-turn-CAUS-REV-PFV CL-pot   CL.DEF
         'She caused the pot to be uncovered.'

        g. *na-gub-ul-en- e   ga-riloŋ   gagu
          RLS.SM.3rd.SG-turn- REV-CAUS-PFV CL-pot   CL.DEF
         'She caused the pot to be uncovered.'

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.

(7)   a. gu-tey-or
        SM.3rd.pl-run-RCM
       'They ran continuously.' or 'They ran for each other.'

        b. gu-tey-ut[16]
        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   Maira
        SM.3rd.pl-run-CAUS-NEG   Maira
      'They did not make Mary run.'

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[16] Example (6b) is pronounced *guteit* because *–it* is an allomorph of NEG in this instance.

The inner stem consists maximally of the innermost stem optionally followed by the RFM and RCM suffixes, where RFM and RCM co-occur and can be in either order. Where the predicate will permit a plausible interpretation, there can be even three of these affixes (if, for example, one of the RCM affixes is interpreted as 'simultaneously'), although triple affixation for RFM/RCM can be somewhat degraded (see section 5). The initial *w-* in (8a,b) glossed CL is a noun class prefix.

(8)   a. 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 for the benefit of each other.'

All other suffixes follow those in the inner stem (when inner stem affixes are present) and the order of outer stem affixes is fixed (e.g., compare (7d) and (9b)).

(9)   a. gu-tey-en-or-en (*gu-tey-en-en-or)
          SM.3rd.pl-run-CAUS-RCM-FMR
          'They used to make each other run.'
       b.*gu-tey-ut-en   Maira
          SM.3rd.pl-run-NEG-CAUS   Maira
          'They did not make Mary run'
       c. gu-tey-en
          SM.3rd.pl-run-FMR
          'They used to run'

The inner stem including the root is identifiable as a unit because in one form of verb reduplication, it is reduplicated and suffixed to the whole unreduplicated stem, as in (10c,d).[17] The emphatic reading is one where it is asserted not just that they did indeed make someone stand, but also that they did so either reciprocally or reflexively. In other words, the reading of every reduplicated morpheme (italicized in the glosses of (10c,d)) is emphasized (it has another interpretation we address below).[18]

(10)   a. U-ññil   wawu   gu-il-en-or-en-e
          CL-child   the.3rd.pl   SM.3rd.pl-stand-CAUS-RCM-FMR-HAB
          'The children made each other formerly stand (up).'
       b. U-ññil   wawu   gu-il-en-oro-e-ol
          CL-child   the.3rd.pl   SM.3rd.pl-stand-CAUS-RFM-HAB-OM

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[17] Other forms of reduplication occur in nominals and, except for *a* nominals, do not have the properties discussed for verb reduplication. We do not discuss *a-* agentive nominals as we cannot examine some of the same issues for interpretive reasons and for reasons of space. For discussion of *a-* nominals and some other forms of reduplication that appear prosodic, see Bassene (2012) and for a brief summary of similar data, see A.-C. Bassene (2007:71) and Sagna (2008:109-110). This form of verb reduplication is mentioned in passing by A.-C. Bassene (2007:79). For some phonological properties of this form of verb reduplication, see Bassene (2012:136-143).

[18] As the variety of examples we present show, neither the weight of the root nor of the stem conditions this form of reduplication, unlike verb reduplication, for example, in Ndebele, as described by Hyman et. al. (2009). See also Bassene and Safir (to appear).

'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   the.3rd.pl   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   the.3rd.pl   SM.3rd.pl-stand-CAUS-RFM-OM-*stand-CAUS-RFM*
  'The children really made themselves stand for him'
  'The children really made him stand for their benefit'

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. The OMs attach to the outer stem to form the outermost stem. OMs are distinguished from outer stem affixes insofar as 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 sections 3 and 4. No other affixes raise independently in this manner. For example, RCM and RFM, when they correspond to arguments of a lower verb, always move with the inner stem and precede aspectual affixes (e.g., as in (10b)), whereas OMs are always stem final, unless there is reduplicated material following. The outer stem with suffixed OM(s) forms the outermost stem, and when the verb reduplication illustrated in (10c,d) applies, the reduplicated portion suffixes to the outermost stem.

The prefixes of Eegimaa are also part of the morphological verb. When verbs are conjoined, the SM must be included.
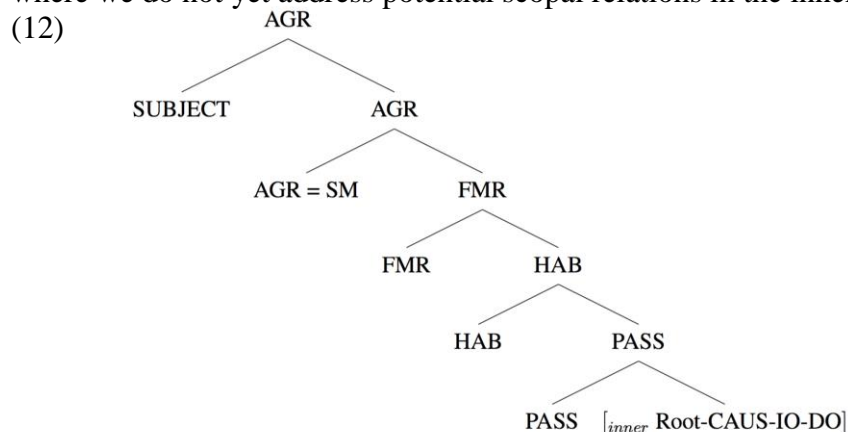
(11)   gu-tiñ-e   su-ol   ni   *(gu)-kkay
        SM.3rd.pl-eat-PFV   CL-fish   and   SM.3rd.pl-leave
        'They ate fish and left.'

The SM is in complementary distribution with the infinitive marker, which appears to be a noun class marker and, unlike the SM, does not agree with the understood subject of the infinitive (more on the infinitive in section 4). Eegimaa has no tense marking affixes and only one independent morpheme that could be thought of as future tense, namely, the invariant *pan,* but it is also used as a modal in conditionals. Another preverbal auxiliary, the anticipatory auxiliary *ban*, which translates as 'about to', we take to be aspectual, and so most of the interpretations that correspond to tense are associated with aspectual markers. As our analysis develops, some morphological subunits we have just proposed will be reanalyzed (and regrouped) in syntactic terms, that is, some will not turn out to be syntactic subunits, but insofar as the template in (3) adequately captures regular features of affixation in Eegimaa, we have begun to set the empirical bar for what any analysis of the stem subunits in Eegimaa must achieve.

2.1.2 The morphological scope anomaly

For the most part, 2.1.1 successfully describes morpheme orders in Eegimaa verb stems and is perhaps adequate as a descriptive template for linear orders, but it does not provide principled reasons 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, the order of morphemes in Eegimaa is in certain respects surprising. In particular, it has been noted for some time (see in particular Bybee, 1985) that the

proximity of an affix to a verb root can indicate how closely related it is to the verb. Cinque (1999), suggests a universal hierarchy for adverb classes such that some adverbs have structurally higher positions than others, and in that structure, the aspectual and adverbial classes would have hierarchical positions higher than passive or causative affixes. Similarly, Rice (2000), addressing morpheme order in the agglutinative morphology of Athapaskan languages, further distinguishes different aspectual classes with respect to which affixes have 'scope' (expressed as c-command) over which other ones with consequences for affix ordering, but like Cinque, she expects PASS to be structurally lower than aspectual affixes such as the habitual and the anterior (FMR in Eegimaa). On these 'scopal' accounts (as well as those of Bybee and of Baker (1985)) we might expect that agreement, mood, tense, aspect and various high adverbial affixes would be further from the verb root than affixes such as PASS, as illustrated in (12), where we do not yet address potential scopal relations in the inner stem.[19]

(12)

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                        AGR
                       /   \
                 SUBJECT    AGR
                           /   \
                     AGR = SM    FMR
                                /   \
                             FMR     HAB
                                    /   \
                                 HAB     PASS
                                        /    \
                                   PASS    [inner Root-CAUS-IO-DO]
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However, this is not what we see in Eegimaa. Although the absence of tense affixes in Eegimaa does not permit us to compare the position of tense relative to that of PASS, and given that the so-called PFV is incompatible with PASS, we are limited to examining the position of certain adverbial suffixes relative to PASS. As indicated in (3), both the FMR and HAB suffixes precede PASS, that is, they are closer to the root than PASS, contrary to expectation, at least if the universal scopal schema is on the right track (and we will assume it is). Recall that PASS is in complementary distribution with OM, even one that is not the passivized argument (but see fn.15), so we illustrate the BEN argument with RCM.[20] For evidence that HAB precedes PASS see (21b).

(13)   Gu-*bog-en-or*-en-i'

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[19] We are assuming that CAUS is always lower than PASS in Eegimaa, but that the verb root is actually below CAUS. See section 3.5.2. The IO and DO in (12) are RCM and RFM affixes which are part of the inner stem, not OMs or full DP arguments in this example.

[20] We will address the relative interpretation and positions of PASS and CAUS further in 3.5.2, but for now our only point is that PASS and CAUS should be closer to the verb stem than any of the aspectual or adverbial affixes by Cinque's hypothesis, for example. We are assuming that the linear ordering of outer stem affixes in Eegimaa reflects a hierarchical ordering (Suffix 1>Suffix 2) that is consistent with the ordering that will be true of some universal scope hypothesis and that no reordering of these aspectual suffixes is necessary to uncover the compositional interpretation. This may be false, particularly if there is morphological FLIP (see 6.3), but we are assuming that no such adjustments will affect our basic reasoning.

SM.3rd.pl-dance-CAUS-RCM-FMR-PASS
'They used to be made to dance for each other'

Eegimaa stem structure does not conform to the scopal schema because the italicized portion of the verb stem in (13), which corresponds to the Eegimaa inner stem, precedes FMR . Thus Eegimaa verb stem morphology exhibits what we will call a 'scopal anomaly'.

However, if we were to suppose that (13) is the actual underlying order in Eegimaa, consistent with the scopal schema, 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 (14).

(14)

OUTER

$[[[Root] \; IRM/CAUS]_{inmost} \; RCM/RFM]_{inner}$ OUTER

$[FMR\text{-}HAB...PASS \quad [t]_{inner}]$
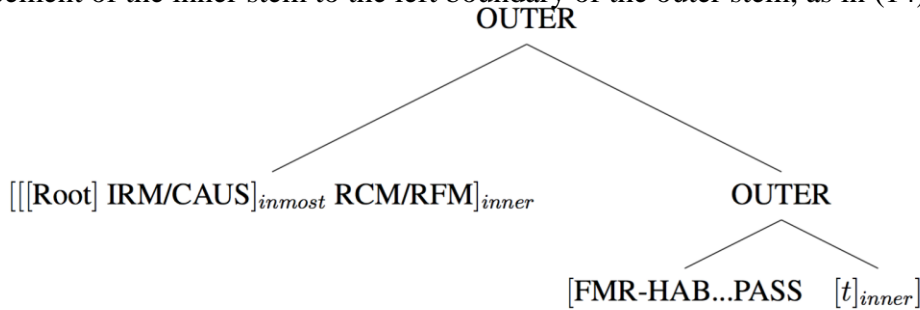
Inner Stem Movement (henceforth, ISM) illustrated in (14) allows us to posit an underlying order consistent with the scopal schema and at the same time derive the surface order. Moreover, there is additional striking evidence for such an operation. If ISM is an instance of displacement couched in a minimalist approach, then it should be derived by internal Merge, that is, the inner stem is merged to 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 (14) provides a perfect model for the reduplication discussed in (10c,d). Further examples of reduplication whereby the lower copy of the inner stem (italicized) is pronounced are presented in (15b,d,f).

(15) a. W-aare   wawu   gu-sal-en-oro-or-e[21]
          CL-women CL.DEF   SM.3rd.pl-praise-REP-RFM-RCM-PFV
          'The women 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'

---

[21] 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 (16b) because PFV is incompatible with reduplication.

        CL-women CL.DEF   SM.3rd.pl-stand-CAUS-RCM-PASS

        'The women were made to stand for each other.'

        'The women were made to make each other stand.'[22]

    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 stand for each other.'

      'The women were really made to make each other stand.'

    g. W-aare   wawu   gu-sal-en-or-ol-sal-en-or-(*ol)

      CL-women CL.DEF   SM.3rd.pl-praise-REP-RCM-OM.3rd.sg-praise-REP-
                             RCM-(* <u>OM.3rd.sg</u>)

     'The women praised each other for him/her and they (really) repetitively did it.

     'The women praised him/her for each other and they (really) repetitively did it.

Once again, note that HAB is not reduplicated in (15b) and that PASS is not reduplicated in (15d) or in (15f) (and if they were, (15d) and (15f) would be *). Moreover, the OM in (15g) cannot be reduplicated either. The key point, however, is that if the movement posited in (14) is modeled in strict minimalist terms, there are no traces, but only copies that may or may not be pronounced, depending on other factors. Depending on how the inner stem is formed, the reduplicated verbs would appear to be just cases where [t] $_{inner}$ in (14) is the pronounced copy of the inner stem.[23]

      Thus ISM resolves the scopal anomaly in Eegimaa. The reduplication of the inner stem described above appears to be striking evidence in favor of the ISM hypothesis as couched within minimalist copy theory.

      At this point, we can also be explicit about the landing site of ISM within the larger stem at this stage. As mentioned earlier, Eegimaa has no tense affixes and only one potential tense morpheme, the auxiliary *pan* illustrated in (16a) which also has a modal character as in (16b).

(16)   a. Woli   pan   ju-pos-o

        PRN.1st.pl   FUT   SM.1st.pl-wash-IRM

        'We will wash.'

     b. jí-jikki-e   búox   pan   ju-jux   Mari a-teb

       SM.1st.pl-hope-PFV COMP   FUT   SM.1st.pl-see Mary SM.3rd.sg-carry

       fo

       PRN.CL.3rd.sg

       'We hope to see Mary win.'

Notice that the SM is part of the verb, not the temporal/modal auxiliary. In fact, only the realis

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[22] We do not understand why there are two causations in one translation each of (15e,f), though the pattern of reduplication is consistent with the movement we propose.

[23] Any theory requires a trigger for reduplication: we propose one later in this section. We are not claiming that all reduplication has its source in a movement-copy relation, but that this one does. As Bassene (2012) shows, other forms of reduplication in Jóola Eegimaa are not built from movement copies. Other accounts of reduplication that rely on movement operations, such as Kandybowicz (2007), Aboh and Dyakonova (2009), or Bassong (2014) involve movements over greater distances, not movement within verb stems (or else the stems cannot be distinguished from bare roots in the relevant cases).

(RLS) marker /n/ precedes the SM, but it is only overt when the SM it precedes begins with a vowel, as only 1st.sg 2nd.sg and 3rd.sg do. We analyze this /n/ as realis because it is never possible in irrealis contexts.

(17) a. *(n)a-jug-om
          RLS.SM.3rd.sg-see-OM.1st.sg
          'He saw me.'
      b. (*n)a-tteg-ut-ol
          RLS.SM.3rd.sg-hit-NEG-OM.3rd.sg
          'He didn't hit him/her.'
      c. Na-jog-e   min   Mari   (*n)a-jow
          RLS.SM.3rd.sg.-demand-PFV COMP   Mary   RLS.SM.3rd.sg-leave
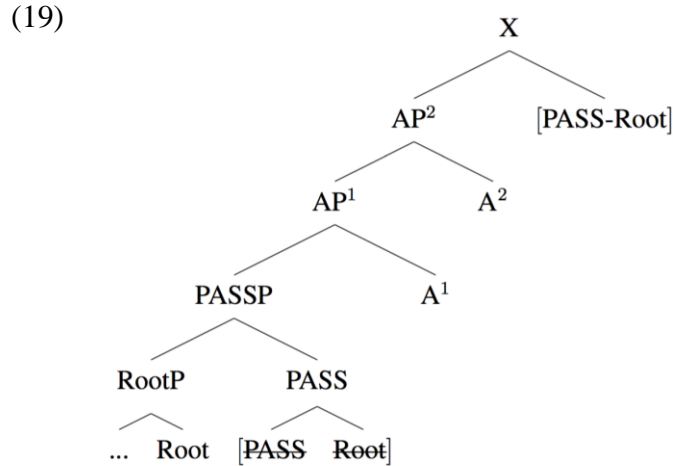   'He demands that Mary leave.'

If the irrealis counterpart of the realis suffix is morphologically null, then it is consistent with Eegimaa word order to say that agreement, in the form of the SM, is hosted by the RLS node. We propose that the inner stem raises to adjoin to (ir)realis and will be linearized to the right of RLS (see section 6.2) and that is why the RLS /n/, when present, precedes the SM. [24] Rethinking (14) syntactically, we arrive at the schematic representation in (18) (where the inclusion of bar levels in this article is for illustrative purposes only).

(18)

```
                    RLS.SM′
                  /        \
            RLS.SM          ...
            /      \         / \
   RLS.SM   [v Root...]  ...   vP
                                / \
                               v′
                              /  \
                    [v Root ...]   RootP
```
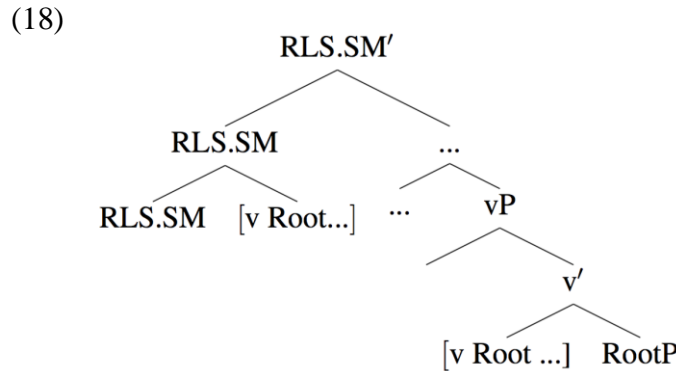
The […] in the tree represents intervening heads and their specifiers and as we have seen, there are intervening affixes, namely, all the affixes of the outer stem and OMs. We reserve OMs for lengthy discussion in section 3, but the possibility that the intervening affixes are in fact intervening heads means that ISM is movement of complex verb stem to RLS that skips intervening projections that could contain FMR, HAB, NEG, PASS, etc. (the complex stem is characterized as 'v…' in (18), as will be discussed later). The latter sort of head movement (unless it proceeds by excorporation, an option not considered here), is a 'long head movement' because it does not respect Travis's (1974) Head Movement Constraint (HMC) – the movement crosses intervening heads. We justify our appeal to head-to-head movement as adjunction to the higher head over phrasal theories of head movement in 6.1 and the ordering of RLS>v is addressed in 6.2.

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[24] The /n/ is also absent when something has been fronted for reasons we do not understand. Other accounts (e.g., A.C. Bassene, 2007: 75) have treated the /n/ as part of a separate paradigm for human singular agreement. We will only include the RLS in the gloss with SM when the /n/ is present, but wherever SM appears, we assume that it is hosted by the RLS node.

Moreover, our proposal is not completely novel. Rice (2000:171) proposes a similar kind of movement in Athapaskan, only in that case it is posited that the verb root first right adjoins to PASS (Athapaskan languages are head-final) and then [PASS-V] skips over all intervening affix/heads and right adjoins to a higher head projection. The prefixes to the right of PASS in its underlying position preserve their hierarchical order in their linear order whereby the first prefix above PASS is the lowest and the last prefix before the surface (PASS-)Root is highest, as schematically presented in (19).

(19)

```
                              X
                          ╱       ╲
                      AP²          [PASS-Root]
                    ╱     ╲
                 AP¹        A²
               ╱    ╲
           PASSP      A¹
          ╱     ╲
      RootP      PASS
      ╱  ╲       ╱   ╲
    ...  Root  [PASS  Root]
```

A^1 and A^2 are hierarchical projections (e.g., aspectual) above PASS and X is the node that dominates the landing site of [PASS Root]. Rice was demonstrating that Athapaskan morpheme ordering is built on the same scopal relations as every other language, such that evidential affixes (in languages that have such affixes) are hierarchically higher than sentence aspect ('viewpoint aspect' in her terminology) which is higher than verb aspect ('situational aspect') which is in turn higher than voice (e.g., passive) and voice is higher than Root. The raising of PASS-Root to the right across intervening prefixes (heads) places PASS-Root at the linear right end of the morphological verb. The surface verb in Athapaskan is sequenced with the lowest prefix first, with each successive prefix hierarchically higher, until the [PASS-Root] is reached at the end, as in (20b), as compared with the posited scopal relations in (21a)

(20)   a. Root<PASS<verb aspect<situational aspect<evidential…
        b. verb aspect–situational aspect–evidential…-PASS-Root

Although Rice does not explore the syntax of this proposal, it requires the same sort of operation as we propose, in that a complex verbal head is raising across higher heads to a target at the top of the sequence of functional projections in the clause.

Both of these proposals, Rice's and ours, thus violate the HMC, but this is not a concern if the HMC is a generalization rather than a principle. We agree with Roberts (2010), who argues at length that the HMC is neither an axiom of the theory nor a corollary, as it is violated in just the way reported here.[25] An alternative to head movement in violation of the HMC would be phrasal movement. Our primary reason for rejecting this approach is that the whole vP is not

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[25] Intervening heads can be skipped as long as phase theory boundaries are respected (on phases, see, e.g., Chomsky, 2001), as we will show that they are in our analysis. Insofar as HMC holds, it is something to be explained, a feat not attempted here.

moved and reduplicated, but rather just the verb and its inner stem affixes. See 3.2 and 6.1for discussion.

Our analysis, like any other, will require some sort of reduplication trigger, e.g., a diacritic on v that will induce the lower copy of the ISM to be spelled out in the morphology.[26] While we could endow the diacritic with an appropriate emphatic meaning, it does not appear appropriate because there is another use of this 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. Recall that PFV and HAB have the same shape, -*e*, but appear in different portions of the stem. Since PFV is incompatible with reduplication, (21a) has the habitual reading unambiguously and thus the reduplicated portion does not have to be interpreted as emphatic.

(21)   a. W-aare   wawu   gu-sal-en-oro-or-e-sal-en-oro-or
             CL-Women CL.DEF   SM.3rd.pl-praise-REP-RFM-RCM-HAB-praise-REP-
                                    RFM-RCM
         'The women habitually repeatedly praise each other for themselves.'
        b. Gu-bog-en-or-e-i'-bog-en-or
             SM.3rd.pl-dance-CAUS-RCM-HAB-PASS-dance-CAUS-RCM
         'They were habitually made to dance for each other.'

Similarly, (21b), where HAB still requires the reduplication,[27] the emphatic reading is not required. In other words, reduplication in (21) has no meaning on its own, but only serves to make salient or available another meaning. One way to model this is to embed the diacritic in the syntax and leave it to the semantics to distinguish when the reduplication it will trigger (in morphology) can or must be meaningful (i.e., emphatic). However the significance of the reduplication is 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).

We have argued so far that ISM is head movement of complex v to RLS violating the HMC, but accounting for the scopal anomaly, on the one hand, and for the exact description of the form that reduplication can take, on the other. Although we assume that ISM takes place in syntax so that its occurrence can be interpreted by the semantic component, we have not shown any effect so far that crucially relies on this assumption, though we will return to this question in section 6, where we discuss the possibility that ISM is post-syntactic (a view we reject). These considerations, however, are about where the movement takes place, not whether or not there is a movement, which we believe we have established.

3.0 Constructing the inner stem: Argument affixes and interpretation

As mentioned earlier and expanded upon in this section, we propose that OMs must be

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[26] Pronunciation of more than one copy is normally blocked by a linearity paradox, following Kayne (1994). Reduplication of v in Eegimaa (and other languages) must be assumed to somehow escape the linearity paradox (x cannot both precede and follow itself), an assumption in minimalism that seems necessary in any context where movement creates multiple copies (see, e.g., Nunes, 2004)].

[27] The reduplication is blocked by the presence of NEG, however, which is why (4d) is not reduplicated.

moved out of the inner stem, or they would not precede the reduplicated inner stem, so we need to justify why RCM and RFM travel with the inner stem and OMs do not. Our hypothesis, as developed below, is that both kinds of affixes move, but RFM/RCM are internally merged to v (and so travel with the inner stem), while OMs are internally merged to vP. We justify our assumption that affix movements are involved by showing that the complex pattern of possible and/or forbidden interpretations of argument affixes relative to each other is a direct consequence of our analysis of how the inner stem is built.

3.1 Multiple argument affixes per stem: Order and interpretation.
      As a matter of presentation, it is useful to first introduce the pattern of interpretations that arises in sentences where more than one affix corresponding to an argument of the predicate is present. When the stem includes both RCM and RFM corresponding to DO and IO/BEN arguments, the affix on the left must be the BEN/IO.[28]

(22)   a. gu-sal-oro-or-e
       SM.3rd.pl-praise-RFM-RCM-PFV
     *'They praised themselves for each other.'
     'They praised each other for themselves.'
     b. gu-sal-or-oro-e
       SM.3rd.pl-praise-RCM-RFM-PFV
      'They praised themselves for each other.'
      *'They praised each other for themselves.'

Thus the order of RFM and RCM is variable, but the resulting interpretation is affected – the first of the two affixes (when both correspond to arguments), is the IO or BEN argument.
      By contrast, however, when there is both an OM and an RFM/RCM, then either affix can correspond to the BEN/IO argument.

(23)   a. gu-sal-oro-ol
       SM.3rd.pl-praise-RFM-OM.3rd.sg
      'They praised themselves for him/her.'
      'They praised him/her for themselves.'
     b. gu-sal-or-ol
       SM.3rd.pl-praise-RCM-OM.3rd.sg
      'They praised each other for him/her.'
      'They praised him/her for each other.'

Since OM(s) always must appear to the right of any RCM or RFM (except when the latter are in the reduplicated stem), the relative order of RCM and OM or RFM and OM is always fixed, yet in these cases, the set of argument interpretations is ambiguous.

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[28] Throughout our elicitations, consultants tended to provide one interpretation for ambiguous sentences until an alternative scenario corresponding to a previously unmentioned or rejected reading was brought to their attention. In cases of potential ambiguity, the scenario was enough for speakers to revise their view about what is acceptable, quite readily in most cases. As consultants warmed to the task, they spotted ambiguities without being provided with extra scenarios (or suggesting alternative scenarios themselves). The readings that we mark with a star are those that no additional context could render acceptable. We stress that our goal is to understand native competence, not to determine what the most likely or necessary interpretation is in a given context of use.

Finally, when there is more than one OM, the OMs appear adjacent to each other, but there are ordering effects based on a person>human>nonhuman and plural>singular hierarchies, such that the highest ranked OM on the first hierarchy precedes any other OM, and if there is a tie then the second hierarchy applies and plural precedes singular.

(24)   Multiple OM Ordering: Multiple OMs can occur in any order unless the following linear ordering restrictions obtain:
  a. human > non-human
  b. animate > inanimate
  c. Local person > third person
  d. Plural > singular unless (a-c) determine precedence.

Whenever the ordering of multiple OMs is fixed by (24), the interpretations are ambiguous as to which OM corresponds to IO/BEN and which corresponds to DO.

(25)   a. gú-kkumen-o(l)-yo
      SM.3rd.pl-feed-OM.3rd.sg.HUM-OM.3rd.sg.NONHUM
      'They fed him/her to it.' (e.g., where 'it' is a big fish)
      'They fed it to him.' (e.g., where it is a big fish)
    b. ná-ccix-yo-yo
      SM.3rd.sg-shave- OM.3rd.sg.NONHUM-OM.3rd.sg.NONHUM
      'He/she saved it for it.' (e.g., the animal for the ranch)
      'He/she saved it for it' (e.g., the ranch for the animal)
    c. gu-xur-ul-ol
      SM.3rd.pl-nurture-OM.1st.pl-OM.3rd.sg
      'They nurtured him/her for us.'
      'They nurtured us for him/her.'
    d. gu-xur-il-ol[29]
      SM.3rd.pl-nurture-OM.3rd.pl-om.3rd.sg
      'They nurtured them for him/her.'
      'They nurtured him/her for them.'

In (25b) the OMs have the same form, but the animate one must precede, so the interpretation is ambiguous. However, it is possible for there to be a sequence of plural local person OMs, i.e., 1st and 2nd person human OMs, and in such cases, nothing in (24) determines which OM precedes, but the surface order has a consequence for interpretation. In contrast to (25a-d), (26a,b) are unambiguous. The first of the two OMs is always taken to be IO/BEN, while the second is the DO.

(26)   a. gu-xur-óli-ul
      SM.3rd.pl-nurture-OM.1st.pl-OM.2nd.pl
      'They nurtured you for us.'
     *'They nurtured us for you.'
    b. gu-xur-ul-óli
      SM.3rd.pl-nurture-OM.2nd.pl-OM.1st.pl

---

[29] The final /l/ of this form is omitted in pronunciation.

'They nurtured us for you.'
*'They nurtured you for us.'
The whole set of observations is summarized in (27).

(27) a. The order of RFM/RCM can vary, but the interpretation of the output is unambiguous: The first affix is BEN/IO and the second is DO.

b. The order of two OMs of equal rank can vary, but the interpretation of the output is unambiguous: The first affix is BEN/IO and the second is DO.

c. The order of RFM or RCM with respect to an OM is fixed – RCM/RFM always precedes OM, but the sentence is ambiguous as to which is BEN and which is DO.

d. The order of unequally ranked OMs is fixed, but the sentence is ambiguous as to which is BEN and which is DO.

Our task now is to show that the interpretive restrictions of (27) are a direct result of the way that the verb stem in Eegimaa is constructed. More specifically, we argue that the mechanism and the assumptions that insure the final position of OMs in the stem (they do not move with the inner stem) derives the effects in (27) as a consequence.

3.2 Analytic commitments for a structural account of ISM

We will first present the structural account of Eegimaa verb stem morphology as motivated by surface order and underlying argument structure, and then we will derive the interpretive effects characterized in 3.1. The form of our explanation for the restrictions in (27) is ultimately very traditional; we argue that instances where the interpretations are ambiguous with respect to which argument is IO and which is DO are cases where the same surface order could be the result of either of two derivations, but each derivation yields an unambiguous interpretation at the semantic interface.

We assume first that the structure of verb phrases includes both a lexical root and a 'little v' that identifies the root as verbal (Marantz, 1997, Kratzer, 1996, Chomsky, 2000). There is controversy in the literature as to whether or not the external argument (EA) of a verb is introduced in the specifier of v (e.g., Chomsky, 1995) or in a higher specifier position, typically called Voice, that is usually also considered to be the node that hosts passive morphology (see, e.g., Kratzer, 1996, Harley, 2013, and Legate, 2014). We will assume that, at least in Eegimaa, that PASS and v are represented by distinct heads, insofar as ISM strands PASS and we postpone discussion of where the EA is introduced (see 3.5.2 and 4.2) but at this point, our analysis only commits us to the claim that the node hosting passive morphology and the v node are distinct.

The unmarked order for the BEN and DO arguments when they are DPs is BEN>DO. We assume this based on contrasts like (28a) vs. (28b), where the subject is focused and both post-verbal arguments are backgrounded. In these situations, only the BEN>DO order is natural.

(28) a. Á-polis   axu   na-jog-e   ba-xa   babu
CL-police CL.DEF   RLS.SM.3.sg-arrest-PFV   CL-forest   CL.DEF
u-bel-a   u-nunuxen   wau.
CL-cut-AGT   CL-tree   CL.DEF
'The police officer arrested the wood-cutters for (the benefit of) the forest.

b. A-pólis   axu   na-bel-e   u-yyatt-a   wawu
CL-police CL.DEF   RLS.SM.3.sg-cut-PFV   CL-log-AGT CL.DEF

17

u-nunuxen   wawu
CL-tree   CL.DEF
'The police officer cut the trees for (the benefit of) the loggers.

Notice that even a non-human benefactive argument must precede the DO, so the person/animacy hierarchy does not play a role with full DP arguments. If we take the strongest hypothesis about BEN arguments, then we must assume they have a single underlying source. Following literature on the contribution of applicative morphemes (e.g. Pylkkänen, 2008), we assume that benefactive double object constructions in Eegimaa involves an applicative morpheme (APPL) which is morphologically null in Eegimaa (though it is visible in other Atlantic languages, including Wolof, see Buell and Sy, 2006 and Hyman, 2007). APPL introduces a BEN argument that c-commands the DO, which is a sister to RootP (the structure for 'high applicative' in Pylkkänen's system[30]) as in (29), representing the underlying structure of sentences like (28a) (but with PASS included to show where it would occur structurally).

(29)
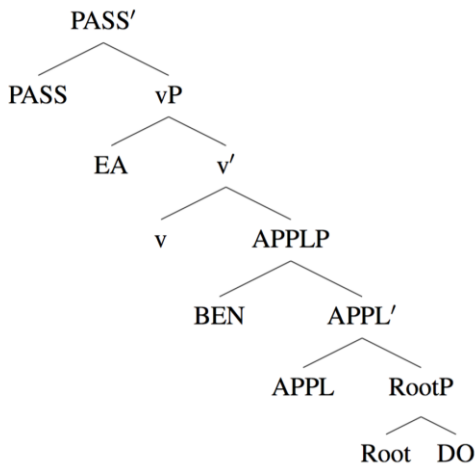
BEN in Eegimaa is possible for any sort of predicate as long as the predicate describes an event or state that someone could benefit from, which correlates with the semantics attributed to the high applicative.

The logic of the ISM analysis pushes us to assume that OMs are somehow subtracted or outside of the unit that undergoes ISM, but that, by contrast, RFM and RCM are part of that unit. Moreover, OMs are always final, unless there is reduplication, and if there is reduplication, the OMs are not part of it; Instead, OMs precede the reduplicated inner stem, as illustrated in (30a,b) (reduplicants of (23a,b), respectively).

(30)   a) gu-sal-oro-ol-sal-oro(*-ol)
        SM.3rd.pl-praise-RFM-OM.3rd.sg-praise-RFM(-OM.3rd)
        'They really praised themselves for him/her.'
        'They really praised him/her for themselves.'
        b. gu-sal-or-ol-sal-or(*-ol)
        SM.3rd.pl-praise-RCM-OM.3rd.sg-praise-RCM(-OM.3rd)
        'They really praised each other for him/her.'

---

[30] In Pylkkänen's system, indirect objects are introduced below Root, e.g. [v [Root [IO [APPL DO]]]. See 3.5.2.

18

'They really praised him/her for each other.'

We propose that OMs move like clitics that adjoin to vP. Then when the inner stem moves, the OMs have already vacated the complement of v by adjoining to vP. We do not assume that OMs move to Spec vP, which is usually filled by an external argument, and movement further would be beyond the edge of vP, which would be movement beyond the v phase boundary (about which, more in 3.5 and section 4).[31] This means that the OMs are structurally lower than the affixes that precede them, such FMR and NEG, as in (4a) (and see fn.15). The basic idea is illustrated in (31), where a transitive verb surfaces with an OM as DO, and the affix sequence is derived from the structure based on the spell-out rule in (32), which is fairly standard in minimalist theorizing.

(31) a. Structure: [$_v$ ***v-Root***]…**FMR**…**NEG**…[$_{vP}$ **OM** [$_{vP}$ *v-Root OM*]]
       b. Surface suffix sequence: **Root-FMR-NEG-OM**
(32) If X c-commands its copy, X', then do not pronounce X'.

(32) insures that the OM which c-commands its copy is pronounced and, assuming head movements c-command their copies,[32] the moved complex v (formed by incorporation of the root into verbalizing v) is the copy pronounced. Exceptions to (32) that take the form of reduplication are formed by dedicated reduplication rules in other theories (or morphemes that hide lower copies from c-command), so there is no novel burden on this theory, e.g., if we assume a reduplication inducing diacritic on v, as discussed in section 2.1.2. In order to insure that the right structure is available for reduplication, however, the inner stem that is moved must not contain the trace of the OM, or else the OM would also be part of the reduplication. That is why we assume that ISM moves a complex v head and not a phrasal category of any sort, because the vP, for example, would include a copy of the moved OM.

Although OMs and RCM/RFM have much in common, what is different about them is that RFM and RCM are more closely related to the verb stem. The assumptions in (33) capture this difference and avoid the two problems that modeling ISM as vP fronting would pose, namely, OMs and their traces and full DP complements are not part of ISM.

(33) a. OMs, RCM and RFM are suffixes -they must be right adjacent to their morphological host.
      b. OMs, RCM and RFM originate in argument positions and uniquely represent a given thematic role.
      c. OMs attach to phrasal vP.
      d. RFM and RCM must adjoin to (complex) v.
      e. The inner stem (complex v) without argument affixes is formed as [$_v$ v Root] or [$_v$ v,[$_{APPL}$ APPL Root]].
      f. Movement of argument affixes is restricted by "Shortest Move".
      g. ISM is raising of v to RLS.(SM).
      h. A copy left by ISM is pronounced (reduplicated) when a diacritic on v permits it to be.

---

[31] Since reduplication of a stem that does not contain an argument affix always precedes full DP direct or indirect objects, we do not assume that full DPs undergo the same movement.

[32] Technically, insofar as head-adjoined affixes do not c-command their copies, (32) should not apply to them. This discrepancy is addressed in 6.1 where the status of head-adjunction that violates Extension and linearization in spell-out are discussed.

Assumptions (33d,e,g) are all instances of head movement that adjoin to heads. Movements of this type typically violate Chomsky's (1995) 'Extension', a matter that is addressed in 6.1, but movements of this kind are common in the literature. An assumption behind (33a) is that syntactic structures do not specify the linear order of sister constituents, and so when X adjoins to Y, there is no determination in the syntax whether X precedes Y or vice versa. For affixes and other dependent morphemes, ordering relations between sisters are settled post-syntactically by host selection as described in 6.2. If OM, RCM and RFM are not right-adjacent to their morphological host, then the sentence crashes in morphology. To ease presentation, when syntactic trees are represented in this paper, the ordering of sisters is given in the form that morphology will ultimately require.

While (33a) and (33b) together capture what is the same about the argument affixes, assumptions (33c) and (33d) capture what distinguishes them, namely, the OMs are essentially like clitics and RCM/RFM are more like affixes, but insofar as they both correspond to argument positions and cannot co-occur with overt DPs, they may be thought of as pronominal (but see section 5). The formation of the complex v from incorporations on the verbal spine is characterized in (33e). Together, (33d) and (33e) determine the formation of the inner stem. Assumption (33f), a general restriction on multiple movements to the same landing site, will derive ordering and interpretation of multiple OMs. Assumptions (33g) and (33h) are just the theory developed in section 2. Further justification for (33b-d) will emerge from the following subsections.

Additional evidence for (33b) is that both OMs and RCM/RFM can climb out of infinitives.

(34)   a. gu-mang-ol   e-sal   (Raised OM)
           SM.3rd.pl-want-OM.3rd.sg   INF-praise
           'They want/ed to praise him/her.'
        b. gu-mang-or-e   e-sal   (Raised RCM)
           SM.3rd.pl-want-RCM-PFV INF-praise
           'They want/ed to praise each other.'
        c. gu-mang-oro   e-sal
           SM.3rd.pl-want-RFM-PFV INF-praise
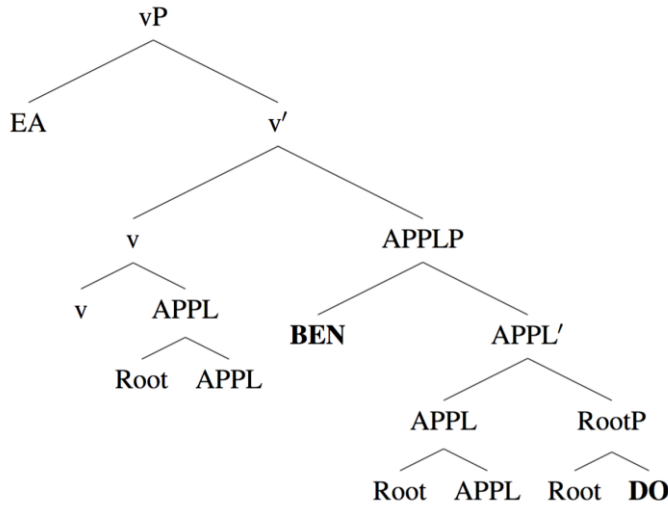   'They want/ed to praise themselves.'

Though the exact analysis of what makes this climbing possible is postponed until section 4, what is important is that these affixes, OM, RCM and RFM in (34a-c), respectively, can raise out of infinitives and still correspond to the infinitival DO in these examples. There is no sense in which the matrix verb in these cases is either reflexive or reciprocal. In other words, OM, RFM, and RCM all act like affixes that represent arguments, not voice markers that modify or restrict just the predicate they are attached to.[33]

---

[33] A reviewer suggests that the climbing may only be apparent and that the complement infinitive is actually a nominalization especially since the infinitival marker is identical to a noun class marker. The reviewer suggests that the matrix takes a benefactive argument and these might be interpreted as 'They wanted praise for each other/themselves'. This analysis is unsustainable where more than one argument affix is raised, since the matrix can only add one benefactive argument. See section 4.

3.3 Stem construction in action

Consider first an example of a verb with no argument affixes, but where APPL is present, so there are two arguments in the complement of v. The formation of the verb from Root, v (and APPL, when it is present) has already been described in (33e) is illustrated in (35) before ISM.
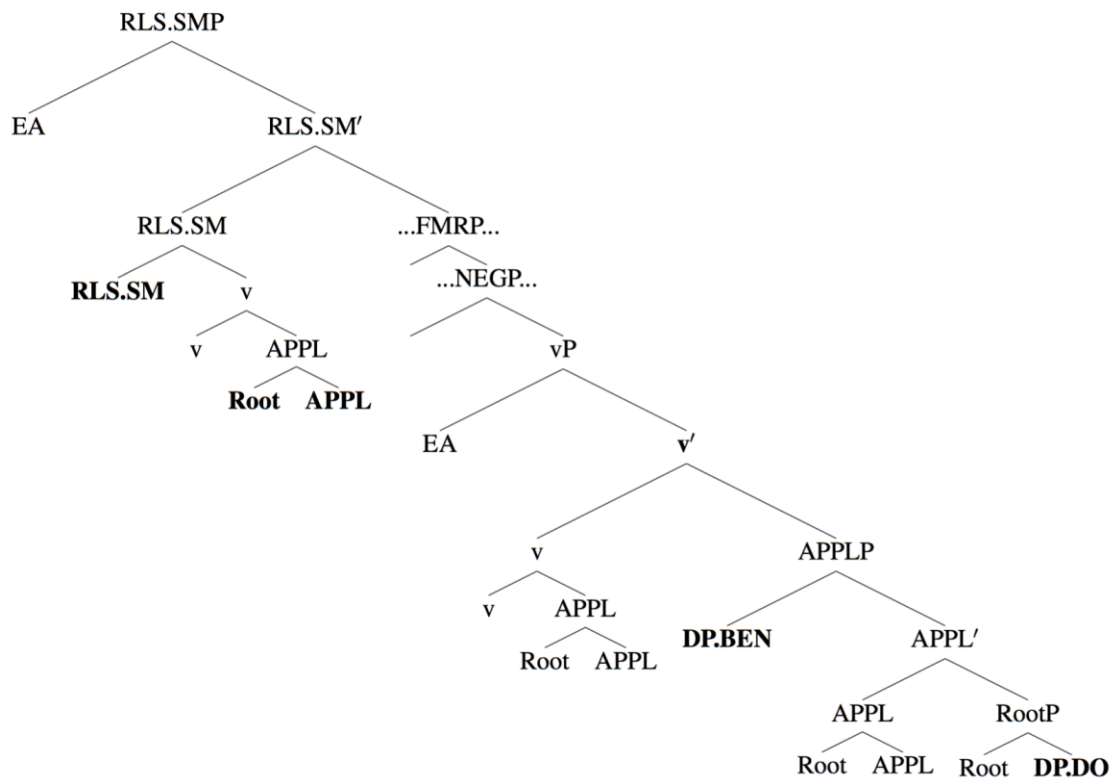
(35)

```
                vP
          ┌──────┴──────┐
         EA            v′
                 ┌──────┴────────┐
                 v             APPLP
             ┌───┴───┐     ┌─────┴─────┐
             v     APPL   BEN        APPL′
          ┌──┴──┐              ┌───────┴───────┐
        Root  APPL           APPL            RootP
                          ┌───┴───┐      ┌────┴────┐
                        Root   APPL    Root       DO
```

Head-raising by adjunction to the next higher head, as mandated by (33e), forms the complex v ([v [Root APPL]] and movement of this kind has a long history in minimalism and before (e.g., Baker, 1988). In this case, since v and APPL are null in Eegimaa, there is no overt evidence for this derivation, nor is there counter-evidence.

If ISM is (complex) head movement to RLS, as illustrated in (36), the resulting surface order leaves the DP arguments in their base positions, since full DP arguments for BEN and DO do not travel with the inner stem, insofar as ISM always applies and yet BEN and DO arguments follow the verb when they are full DPs, as illustrated earlier in (28). Only bolded elements are pronounced, i.e., unbolded copies are not pronounced, nor v or APPL, which lack morphology.

(36)

```
                 RLS.SMP
          ┌─────────┴─────────┐
         EA               RLS.SM′
                     ┌─────────┴──────────┐
                  RLS.SM              ...FMRP...
               ┌─────┴─────┐         ┌──────┴──────┐
            RLS.SM         v       ...NEGP...
                       ┌───┴───┐         ┌────┴────┐
                       v     APPL                  vP
                          ┌───┴───┐         ┌───────┴───────┐
                        Root    APPL       EA              v′
                                                     ┌──────┴──────┐
                                                     v           APPLP
                                                 ┌───┴───┐   ┌─────┴──────┐
                                                 v     APPL DP.BEN      APPL′
                                              ┌───┴───┐           ┌───────┴───────┐
                                            Root    APPL        APPL            RootP
                                                            ┌────┴────┐    ┌──────┴──────┐
                                                          Root    APPL   Root         DP.DO
```

Now, if only highest copies are pronounced, then only the bolded elements would be pronounceable in morphology in the sequence **RLS-v-APPL-Root DP.BEN DP.DO** for (36), though APPL and v lack lexical morphology.

Thus two forms of head movement are involved in generating (36), namely, incorporation of nodes on the verbal spine and (potentially) long head movement to RLS (=ISM). We assume that (32) (copy suppression) applies each time a copy is made, and so as the derivation proceeds, the elements designated not to be pronounced are adjusted accordingly (unless marked with the reduplication diacritic) until a phase is closed, at which point only elements in the edge of the phase are accessible for movement and subsequent copy suppression. Following Chomsky (2000), we assume that v is a phase, so only v, its specifier, and adjuncts to vP can still be adjusted by (32) after vP is complete (but see 3.5.2).

Adjunction of the OMs outside of vP is a form of cliticization in this analysis and is adjunction of a head to phrase. OM adjunction to vP rather than v means that an OM, though it will be part of the verb in morphology at the surface, is never part of the inner stem, now understood as a complex v. An OM will thus be stranded as in (31) and not included in reduplication (as illustrated in (30a,b)).

Our structural analysis now accounts for the morphological scopal anomaly, it accounts for what portion of the stem is reduplicated (assuming the reduplication diacritic), it accounts for why OMs are final and not reduplicated, and why the reduplication is final (after the OM). The analytic commitments embodied in the assumptions in (33) will be further examined in sections 4 and 6, but we will not add to them substantially in what follows.

3.3.1 Shortest Move

We are now ready to return to the interpretive generalizations presented in (27) and the role of (33f), Shortest Move, in making the right predictions. The patterns of interpretation of argument affixes to be explained are more briefly restated as follows:

(37)   a. OMs of equal rank are ordered BEN/IO > DO
            b. When OM are ordered by hierarchy, 1,2 > 3; human>animate>inanimate; plural>sg
            c. RFM/RCM precede OM.
            d. RFM/RCM>RFM/RCM are interpreted BEN/IO > DO

We now demonstrate that the structural account derives all of the results in (39a-d) without any appeal to extra devices.

Our account for (37a) is based on 'Shortest Move' (33f), which Richards' (1999) employs to account for superiority effects and certain instances of clitic placement ordering. Richards' account is designed to explain cases where underlying hierarchical relations between two elements is preserved in precedence relations when both elements are attracted to the same landing site (an effect that results in posited underlying hierarchical order matching surface linear order after movement). We contend Shortest Move governs multiple movements of OMs to vP-adjoined position such that RFM/RCM that are ordered BEN/IO >DO in the applicative structure are still ordered BEN/IO>DO as OMs after each adjoins to vP. This is so because the highest OM (BEN/IO) moves first to adjoin to vP and then the second, lower OM (DO) moves next and the shortest distance for OM.DO to travel is to adjoin to vP 'tucking in' below the OM.BEN/IO, as in (38), a representation for an example like (26a), repeated below.

(26)   a. gu-xur-óli-ul
           SM.3rd.pl-nurture-OM.1st.pl-OM.2nd.pl
           'They nurtured you for us.'
        *'They nurtured us for you.'

(38)

$$\ldots \text{NEG}' \quad [NEG \quad vP] \quad [OM_1 \quad vP] \quad [OM_2 \quad [_{vP}\, EA\, [v\, [_{APPLP}\, OM_1 [APPL\, [_{RootP}\, Root\, OM_2]]]]]]$$
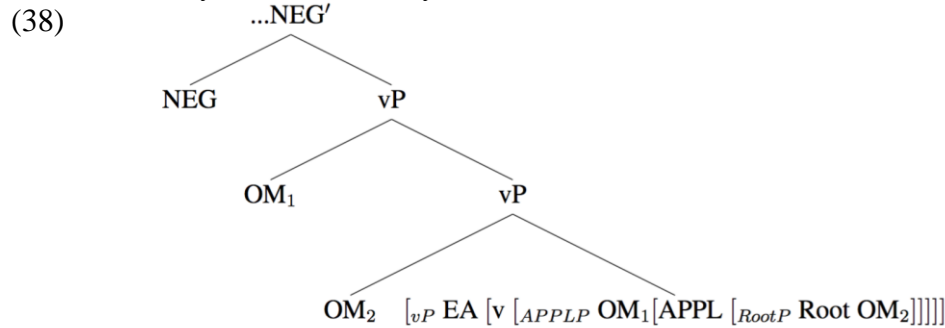
The outcome of the derivation is represented by the tree in (39), where the two OMs are stranded in final position by ISM. The linear pronunciation is bolded as V-OM$_1$-OM$_2$, but if the sentence were negated, then NEG would intervene between the inner stem and the OMs.[34]

(39)

$$XP \quad [_v\, \text{v-Root-APPL}] \quad \ldots(\text{NEGP}) \quad (\text{NEG}) \quad vP \quad OM_1 \quad vP \quad OM_2 \quad vP \quad [\text{v-Root-APPL}] \quad [_{APPLP}\, OM_1\, [APPL\, [_{RootP}\, Root\, OM_2]]]$$
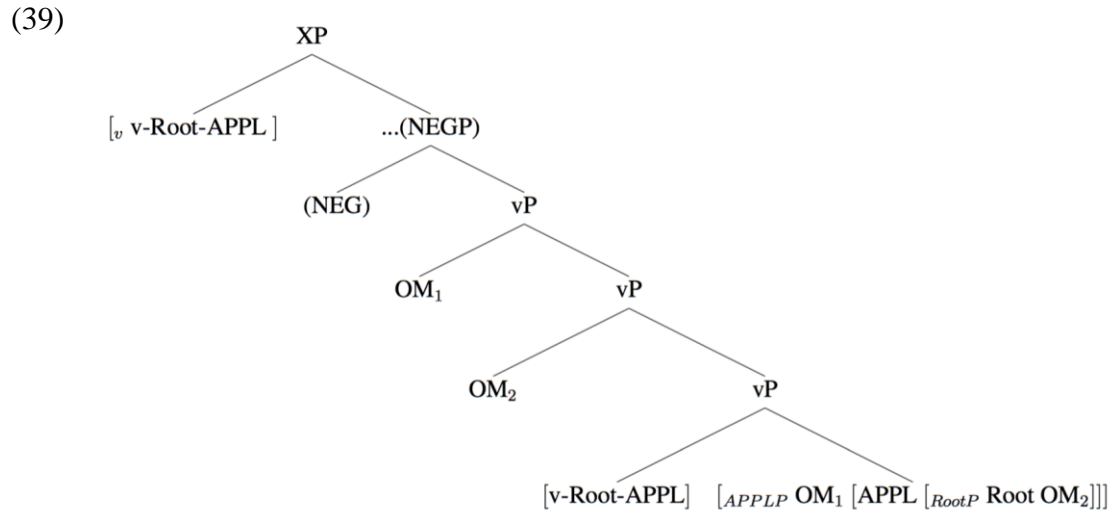
Thus shape conservation enforced for OM extraction from vP by Shortest Move now accounts for the rigid interpretation of superficially variable orders when the two OMs are equally ranked.[35]

        When the two OMs are not equally ranked, the hierarchy in (24/37b) determines their order. We assume that there is a post-syntactic rule of morphology (see 6.3) that orders the OMs according to their relative ranking (i.e., the person, animacy and number features are evaluated by the ordering rule in the morphology). Before reordering according to ranking, (39) is the structural relationship between the two OMs, but surface reordering by ranking obscures this structural outcome. Thus it is not possible to tell whether OM$_1$ originated in the BEN or DO position, that is, two structures could lead to the same surface outcome in every case of ranked

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[34] We henceforth omit EA in representations where it does not make a difference for the point under discussion.
[35] We do not entertain an account of OMs as externally merged agreement markers, not only because of the lack of doubling effects with a DO, but because it is not obvious how such an account could predict this ordering effect.

ordering of OMs. As a result, rank-determined orderings of OMs are always ambiguous.[36]

Turning now to the interpretation of RFM-RCM and RCM-RFM orders, recall that we have stated the obvious empirical difference between OMs and RFM/RCM in terms of what they attach to. Our assumption (33d) is that RFM and RCM both attach to v, not vP, and hence participate in a form of word formation different from adjunction to a phrase. Consider the structure that results in (40) where the RFM is BEN and the RCM is DO. After the complex v consisting of [v [APPL Root]] is formed,[37] the higher of the two affixes in argument structure, RFM in this case, will attach first, and then the RCM will attach since the RCM is more distant from the targeted landing site.

(40)

```
                          vP
                    /            \
                  EA              v'
                            /            \
                          v               APPLP
                      /       \         /    |       \
                    v     RCM.DO   RFM.IO        APPL'
                 /     \                       /       \
                v     RFM.IO                APPL     RootP
              /   \                                  /     \
            v    APPL                              Root   RCM.DO
          /    \
        Root   APPL
```
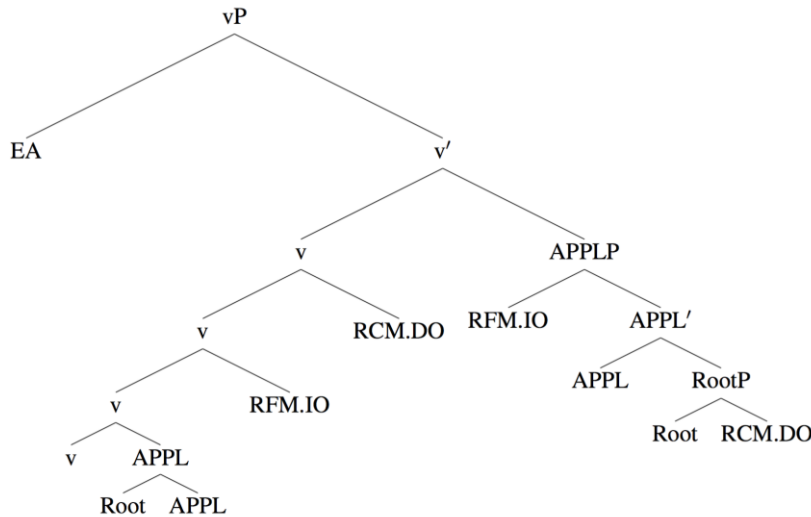
Notice that in this case, the first affix to move, RFM, ends up structurally lower, thus closer to the complex v, and that the second affix to move, the more distant RCM, does not, in this case, tuck in. Movement of the latter type would violate the Peak Novelty Condition that will be introduced in 6.1 (see fn.57). Since the order of suffixes, other things being equal, means that they are pronounced according to which one is structurally and linearly closest to the stem, the v-affix representing the BEN argument will always attach first and always precede the v-affix representing the DO argument. The first of two such argument affixes must always originate from the BEN position and there is one structure per interpretation. Such sentences are always unambiguous, at least with respect to which of the two arguments is BEN and which is DO. Moreover, the person-animacy-plural hierarchy does not apply to RFM and RCM, since they are morphologically invariant for noun class, person, number and animacy, so the result of structural ordering is unobscured.

The final interpretive generalization is that when both an OM and an RFM or RCM are on the same verb, the interpretation as to which of the two affixes is OM and which is

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[36] See Baker, Safir and Sikuku (2012) for a structural approach to person/animacy hierarchy for OM ordering in Lubukusu.

[37] We do assume that complex v formation precedes RFM and/or RCM adjunction to v for the sake of clarity, though the rule ordering would have no empirical consequence in Eegimaa because v and APPL are null. The difference might be detectable in another language with sufficiently similar properties where v and/or APPL are not null. See the discussion of causatives in section 5.

RFM/RCM is ambiguous. Since these affixes move to different positions, Shortest Move plays no role, nor does the hierarchy, since RFM/RCM are invariant, but our theory predicts the ambiguity straightforwardly: If the OM corresponding to BEN adjoins to vP and the RCM/RFM corresponding to DO is in the inner stem, then the order is DO.RCM/RFM>BEN.OM. If the RCM/RFM is BEN and the OM is DO, ISM carries the RCM/RFM with it and the OM is still stranded. In other words, the result is RCM/RFM.BEN>OM.DO in both cases; each derivation produces only one interpretation, but both derivations produce the same surface order.

3.4 Results so far

Our account of the morphological scope anomaly and reduplication by appeal to ISM has been integrated with our account of the range of permitted and prohibited readings for argument affix combinations. ISM and the assumption that RFM and RCM attach to complex v accounts for why RFM and RCM always precede OMs, and adjunction to vP explains why OMs always follow all of the higher aspectual affixes that do not reduplicate, but the OM precedes the reduplicated inner stem. Our assumption that multiple OMs are regulated by Shortest Move predicts the effect that OMs targeting the same landing site will always align such that the highest argument affix before movement will also be the highest of the two argument affixes after movement,– a result obscured by the person/animacy/number hierarchy, as described. When argument affixes do not have the same landing site, their surface order is no guide to their interpretation as DO or BEN. Moreover, the ISM account and Shortest Move now permit all interpretation to be derived from underlying structures that correctly guide compositional interpretation.

3.5 Two other multiple argument-affix constructions

We have been assuming the vP analysis throughout, where v takes VP as its complement and the EA receives its thematic assignment in Spec vP and we have also assumed that PASS is in a structural position higher than v and our reason for taking this position is that ISM moves the complex v and strands PASS, as shown by (a) the distance of PASS from the stem and (b) the fact that PASS does not reduplicate with the inner stem. In this respect, PASS marks the edge of the domain of v. We have also assumed the high applicative analysis of Pylkkänen (2008), according to which APPLP is the complement of v and takes VP as its complement, an assumption that allows us to encode the hierarchical difference between BEN and DO arguments when both are present (i.e., with transitive verbs). It is reasonable to ask how our analysis of argument affixes (RCM, RFM and OM) extends to other sorts of argument structures, arguments introduced by affixes other than high APPL.

3.5.1 Double object verbs

Pylkkänen (2008) also proposes that some double complement verbs introduce APPLP below Root ('low applicatives'), and though we are not committed to that particular analysis, (a version of Larson's (1988) verb shell analysis would serve as well), the logic of our explanation is only consistent with an asymmetric argument structure for double complements, where the indirect object (IO) is hierarchically higher than the DO.

(41)   [$_{vP}$ EA [v [$_{RootP}$ Root [$_{APPLP}$ IO [APPL DO]]]]]

25

This is consistent with the distribution of full DPs for double object verbs, as in (42) insofar as the first of two DPs is interpreted as the IO.

(42) a. Gu-mmann-e   Bil   w-aare
      SM.3rd.pl-lend-PFV   Bill   CL-woman
      'They lent women to Bill'
     b. Gu-mmann-e   w-aare   Bil
      SM.3rd.pl-lend-PFV   CL-woman   Bill
      'They lent Bill to women'

Since the proximity of IO and DO to v and vP is the same in relative terms as we find in the high applicative analysis for BEN and DO, the distribution of argument affixes for low applicatives is predicted to work just as laid out in section 3.1 Although natural interpretations are not easy to formulate for all of the RCM and RFM combinations with verbs of this kind, the data for IO distribution appears to match the distribution of BEN.

(43) a. Gu-sen-or-oro
      SM.3rd.pl-give-RCM-RFM
      'They gave themselves to each other'
     b. #Gu-sen-oro-or
      SM.3rd.pl-give-RFM-RCM
      'They gave each other to themselves.' (consultants find situation implausible)
     c. Gu-sen-om-il
      SM.3rd.pl-give-OM.1st.sg-OM.3rd.pl
      'They gave them to me'. / 'They gave me to them'.
     d. Gu-sen-or-il
      SM.3rd.pl-give-RCM-OM.3rd.pl
      'They gave them to each other.' / 'They gave each other to them'.

Where both orders are possible for RCM/RFM, the first of these must be interpreted as BEN, even if the result is hard to make sense of, as in (43b). Where orders are rigid, either due to hierarchical ranking of OMs or due to ISM containing an RCM/RFM, but not an OM, both interpretations are available. In short, there are no surprises.

3.5.2 Causatives

      Causativization in Eegimaa is not felicitous with transitive verbs, as illustrated in (44a,b). To achieve a causative reading for 'praise' an independent causative verb is necessary, as in (44c).[38] Recall that homophonous REP and CAUS (-*en*) occupy the same position in the innermost stem and are mutually exclusive, so when the morpheme -*en* is attached to a transitive verb, a reading is available, but it is not that of causation, but rather conveys that the action was done repetitively, as in (44a). This is true even when the internal argument of the corresponding transitive appears as a subject when the verb is affixed by PASS.

(44) a. w-aare   wawu   gu-sal-en-or-i'
      CL-women DEF.3rd.pl   SM.3rd.pl-praise-REP/*CAUS-RCM-PASS

---

[38] 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 women were praised repetitively for each other'
*'The women were made to praise each other.'
b. W-aare   wawu   gu-sal-en-or-i'-sal-en-or
CL-Women DEF.3rd.pl   SM.3rd.pl-praise-REP-RCM-PASS-praise-REP-RCM
'The women were really repetitively praised for each other'
*'The women were really made to praise each other.
c. Ni-kkan-e   ú-pur   wawu   ni   gu-sal-or
RLS.SM.1st.sg-make-PFV CL-boy DEF.3rd.pl CON   SM.3rd.pl-praise-RCM
'I made the boys praise each other.'

Causativization of transitive verbs requires an independent 'cause' verb, as in (44c). Intransitives to which CAUS is attached, including unergative verbs, behave like transitive verbs. They can be passivized, and the addition of a BEN argument in the form of RCM does not change this.

(45)   a. Gu-bog-en-or-en-i'
SM.3rd.pl-dance-CAUS-RCM-FMR-PASS
'They used to be made to dance for each other'
b. Gu-bog-en-or-e-i'
SM.3rd.pl-dance-CAUS-RCM-HAB-PASS
'They were habitually made to dance for each other'

In traditional accounts, CAUS introduces an agent of causation and if the verbalized root denotes the caused event, then CAUS should be outside of v, taking vP as its complement.

(46)   [PASS [causer [CAUS [EA [v Root]]]]]

On this model, the causer argument is higher than the 'natural argument' of the intransitive, potentially an external argument for an unergative verb as in (46), but notice that this model does not make any prediction about whether or not transitives can be causativized in Eegimaa. That is, there is no reason why CAUS could not just as easily apply to transitives in Eegimaa if CAUS is introduced outside of v. Suppose, however, that CAUS in Eegimaa is actually an instantiation of v, as has been proposed by Pylkännen (2008) and others since (Wurmbrand, 2001, Alexiadou et. al, 2006, Harley, 2013, Legate (2012, 2014,) (though we diverge from these accounts in various respects – see below). If it is, then the causer is indistinct from the EA of v, but that leaves the 'natural' subject of the intransitive without an argument position. Suppose that in this case, the natural argument of the ergative intransitive can be expressed as a complement, that is, as a direct object, as in (47). [39]

(47)   [(PASS) [causer [v.CAUS [Root DO]]]]

The possibility of using the complement position of Root is available because unergatives do not have direct objects by hypothesis, but any transitive verb will have an internal argument that

---

[39] Legate (2014) also provides an analysis of lexical causativization of unergatives that involves ceasing to treat the causee as an additional external argument, but in her analysis there is an additional head on the verbal spine below CAUS that she likens to a high applicative head. This 'lower voice' node introduces the natural argument of the unergative verb and induces patient semantics. An actual high applicative would have to be inserted above the lower voice node in order for it to be consistent with our analysis, but this does not appear to pose a problem because, the difference between these approaches (Arad's and Legate's) do not affect the basic reasoning here concerning the hierarchical relation between the agent of the causative verb, a high applicative argument (BEN in Eegimaa) and the natural argument of the causativized unergative.

precludes introducing the natural argument as a DO. Positing that CAUS=v in Eegimaa thus predicts that it can only combine with intransitives, which is exactly the case.[40] Moreover, recall that CAUS is part of the innermost stem, always directly affixed to the root. Given the absence of applicative morphology, this analysis correctly predicts that CAUS will be the first suffix on the verb, since the complex v spine is formed before RFM and RCM are attached.

The basic idea for this analysis is similar to that proposed by Arad (2002), who accounts for lexical causatives formed from unergative verbs in Hebrew. She argues that lexical causatives are derived by introducing the agent EA in Spec vP where v is the causative morpheme (a vowel-consonant melody in Hebrew) shifting the external argument of the unergative verb into DO position as a complement of the root verb. This shift is required because there is only one agent per event and semantic ill-formedness would result if two external arguments are assigned to the same event. She points out that verbs that involve directional motion in English can be lexically causativized (e.g., 'We ran the mouse through the maze.') and suggests that the same sort of structure is generated in English for such examples.

While this approach accounts for the position of CAUS in Eegimaa stems and predicts the restriction on causativization of transitives, it also has another benefit that returns our attention to multiple argument affix constructions. Introducing the high APPL head into the structure in (47), we get (48).

(48)   [(PASS) [causer [v.CAUS [BEN [APPL [Root DO]]]]]]]]

If the BEN argument is higher than the natural argument of the intransitive verb, indeed if the natural argument is a DO, then the theory of affixation developed for transitive verbs with BEN arguments should result in the same hierarchical effects for causativized intransitives with benefactive arguments.

(49)   a. Gu-bog-en-e   u-ññil   wawu
          SM.3rd.pl-dance-CAUS-PFV   CL-child   CL.DEF
          'They made the children dance'.
        b. Gu-bog-en-oro-or
          SM,3rd.pl-dance-CAUS-RFM-RCM
          'They made each other dance for themselves'
         *'They made themselves dance for each other.'
        c. Gu-bog-en-or-oro
          SM.3rd.pl-dance-CAUS-RCM-RFM
          'They made themselves dance for each other'.
         *'They made each other dance for themselves.'
        d. Gu-bog-en-om-il
          SM.3rd.pl-dance-CAUS-OM.1st.sg-OM.3rd.PL
          'They made them dance for me'. / 'They made me dance for them'.
        e. Gu-bog-en-or-il
          SM.3rd.pl-dance-CAUS-RCM-OM.3rd.PL

---

[40] We do not have syntactic criteria to distinguish ergative intransitives from unaccusative ones in Eegimaa so we are relying on semantic verb class distinctions. If verbs like *bog-* have unaccusative syntax when not causativized, our reasoning here is undermined, but also undermined would be most accounts of semantic properties of unergatives.

'They made them dance for each other'. / 'They made each other dance for them' Examples (49b,c) show that with surface variation in the order for RCM/RFM yields the unambiguous interpretation, BEN>causee. Where the surface order OM.1st-OM.3rd follows the ranking in (24) and the difference between two derivations is obscured, as in (49d), the surface form is ambiguous. Finally, where RCM, as part of the inner stem, must always precede the OM, as in (49e), the surface form is also ambiguous as to which OM is causee and which is BEN, again because two different derivations produce the same surface string. Thus structure yields unambiguous interpretation in all cases.

Notice that this result would be unexpected if CAUS were introduced higher than v, in which case the EA of v would be higher than BEN and the exact wrong prediction would be made, that is, the natural argument of the intransitive would be higher than BEN, which is introduced below v. This is the third argument that in Eegimaa, CAUS=v.

One further potential advantage for this analysis is that it may also extend to REV and REP in Eegimaa, that is, REV and REP, if they are also identified with v, would be mutually exclusive with each other and with CAUS, they would appear in the same position on the stem as CAUS, but since, unlike CAUS they do not introduce an additional argument, they are not restricted to intransitives. The idea that v may have many morphological semantic instantiations other than CAUS has been proposed by Wurmbrand (2001) and others since (e.g., Folli and Harley, 2007).

As mentioned above, though we adopt Pylkännen's proposal that CAUS=v, our account is not consistent with hers. First of all, Pylkännen distinguishes varieties of causation, depending on whether the CAUS morpheme selects a phase, a vP or a root. Our proposal appeals to the last analysis. Moreover, on Pylkännen's account, the EA is introduced by a higher Voice head above v which is also the locus of PASS morphology (see also Kratzer 1996, Harley 2013, amongst others). The CAUS morpheme introduces the semantics of one event causing another, but the agent of the first event is thus not an argument of CAUS; rather the agent of CAUS is introduced by the Voice head.[41] If this is so, issues then arise as to what the phase boundary is on the verbal spine. If v is the phase head, then the EA is not part of the phase that includes v, Root, or any direct or indirect object. There is no overt evidence for case marking in Eegimaa, but looking beyond Eegimaa, if the EA is outside of the Case domain for v, then it is not clear how to unify accusative assignment in active transitives (assigned by v, perhaps) with Case suppression in passive constructions. If Voice is the phase head, this difficulty disappears (as in Legate, 2014), but consequences for our analysis then arise.

According to Phase Theory (e.g., Chomsky 2001), no movement can move beyond the phase edge, but elements in the phase edge (and only these) are eligible for movement within the next phase. Elements outside the complement of the phase head are in the phase edge, including the phase head itself. If Voice rather than v is the phase head, then it is not clear how ISM can apply across the VoiceP boundary, that is, ISM would violate Phase theory, if v is not the head of the phase. This consequence would hold of any theory of v-movement that raises v without first

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[41] From what we have been able to determine, direct causation, clearly a single event, seems to favor the use of the affixal –*en* causative over the use of the independent verb meaning 'cause', *ekkan-*. Some psych predicates can use either form to construct the causative meaning and others require CAUS. We are not certain that CAUS can only be used for direct causation, as our analysis of it would lead us to suspect. This is a matter for future research.

adjoining to Voice. If Legate and others are correct in positing Voice as the phase head rather than v for the languages that they have discussed, it could be that there is variation across languages as to whether or not Voice is a phase head or v is. Recall that in Athabaskan, the movement corresponding to ISM carries the PASS morpheme with it, suggesting that v first raises to PASS before long head movement.

Alternatively, the verbal spine could be extended further, such that the node currently called 'Voice' is indeed the node that introduces the EA, but PASS is in a node higher still. Then it would be possible for v to raise (ISM, in this case) to (phonetically null) Voice before escaping the VoiceP phase for its final destination (RLS). All of the results so far are preserved at the price of adding a new node on the verbal spine, call it PASS, which is higher than the EA-introducing node that Kratzer and Legate, among others, call Voice. PASS restricts the thematic assignments on the EA introduced by Voice (see Legate, 2014:2, for discussion of selectional restrictions on EAs that are 'initiators', on the assumption that PASS=Voice). Then Case can be assigned within the VoiceP domain that includes both EA and DO.[42]

This means that there would be an extra step in the analysis of raising of complex v out of VoiceP, namely, an incorporation into Voice by complex v before it moves to RLS. Incorporation into Voice would then make [Voice-v] a part of the VoiceP phase edge and hence eligible for movement to RLS in the next phase.

Although the issues surrounding CAUS and v are independently interesting, the key point of this section is that the distribution of multiple OMs and their interpretation follow the same logic of preserved hierarchy that accounts for double object and benefactive constructions with transitive verbs. We will continue to assume that ISM is movement of complex v to RLS, adding the adjustment of incorporating complex v into Voice before ISM to RLS only where that difference is at issue.

4.0 Affix climbing

In an earlier section, we pointed out that RCM, RFM and OMs in Eegimaa can raise out of infinitives and used it as part of the justification for treating argument affixes as different from other affixes. In this section we present the affix-climbing pattern in infinitival contexts in more detail and we argue that given a simple adjustment, one necessary in some form or another in any account, our theory accounts for the climbing pattern without revision.

All of the argument affixes, RCM, RFM, OM, and combinations or multiples of these can optionally participate in raising out of an infinitive to adjoin to the verb that selects the infinitive. More than one noun class marker can introduce what we are taking to be an infinitive, but for the purposes of illustration, we limit ourselves to infinitives prefixed with the *e-* marker. When *e-* is present, a SM is not possible, but infinitives can otherwise take nearly all the same affixes that an agreeing verb can. Argument affix climbing is optional in all cases, as far as we can tell, and without interpretive consequences (limiting contexts of use). We use the gloss 'INF' for the infinitival marker though it has the same shape as a particular noun class marker.[43]

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[42] PASS would then have to select a Voice head that cannot assign Accusative, and probably there are other adjustments that would be required, but no exceptional obstacles appear to threaten the analysis.
[43] Sometimes infinitives are introduced by other markers depending on factors we do not yet understand, including the infinitival verb root and the context of complementation. This example is also acceptable with the *e*-prefix.

(50) a. gu-mang-or-e   e-sal   (Raised RCM)
         SM.3rd.pl-want-RCM-PFV   INF-praise
       'They want/ed to praise each other.'
      b. gu-mang-oro-e   e-sal   (Raised RFM)
         SM.3rd.pl-want-RFM-PFV INF-praise
       'They want/ed to praise themselves.'
      c. gu-mang-e   e-sal-or   (Unraised RCM)
         SM.3rd.pl-want-PFV   INF-praise-RCM
       'They want to praise each other."
(51) a. gu-mang-oro-or-e   e-sal   (Raised RFM RCM)
         SM.3rd.pl-want-RFM-RCM-PFV   INF-praise
       'They want/ed to praise each other for themselves.'
      b. gu-mang-or-oro-e   e-sal   (Raised RCM RFM)
         SM.3rd.pl-want-RCM-RFM-PFV   INF-praise
       'They want/ed to praise themselves for each other.'
(52) a. gu-mang-oro-ol   e-sal   (Raised RFM OM)
         SM.3rd.pl-want-RFM-OM.3rd.sg   INF-praise
       'They want/ed to praise him/her for themselves'
       'They want/ed to praise themselves for him/her.'
       'They want/ed to praise him/her on their own/by themselves.'
      b. gu-mang-or-ol   e-sal   (Raised RCM OM)
         SM.3rd.pl-want-RCM-OM.3rd.sg   INF-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'
(53) a. Na-mang-ul-oli   e-sal   (Raised equal-ranked OMs)
         RLS.SM.3rd.sg-want-OM.2nd.pl-OM.1st.pl INF-praise
       'S/he wants/ed to praise us for you.'
      b. Na-mang-om-ol   e-sal   (Raised unequal rank OMs)
         RLS.SM.3rd.sg-want-OM.1st.sg-OM.3rd.sg   INF-praise
       'S/he wants/ed to praise him/her for me.'
       'S/he wants/ed to praise me for him/her.'
(54) a. Na-mang-e   e-sal-ul-oli   (Unraised, equal-ranked OMs)
         RLS.SM.3rd.sg-want-PFV   INF-praise-OM.2nd.pl-OM.1st.pl
       'S/he wants/ed to praise us for you.'
      b. Na-mang-e   e-sal-om-ol   (Unraised OM, unequal rank)
         RLS.SM.3rd.sg-want-PFV   INF-praise-OM.1st.sg-OM.3rd.sg
       'S/he wants/ed to praise him/her for me.'
       'S/he wants/ed to praise me for him/her.'

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i.   Jon na-mang-e fi-tiñ ju-ol jaju
        Jon RLS.SM-want-PFV INF-eat CL-fish CL.DEF
        'John wants to eat the fish.'
Affix-raising is also possible out of infinitives with the *fi-* prefix.

31

c. Gu-mang-e   e-sal-or-ol   (Unraised RCM and OM)

     SM.3rd.pl-want-PFV   INF-sal-RCM-OM.3rd.sg

     They wanted to praise him/her for each other.'

     'They wanted to praise each other for him/her.' (see also (71))

The same ordering restrictions for multiple argument affixes and the same pattern of possible and impossible interpretations discussed in section 3 hold for multiple raised argument affixes as illustrated in (51-54), just as they do when the affixes are not raised, as illustrated for just OM combinations in (51a,b), but unraised examples for all the combinations behave alike.[44]

     The simplest way for our theory to accommodate these facts is to assume that stem construction that applies to v in simplex clauses optionally applies instead to the matrix v that takes the infinitival complement where the argument affixes originate. If, however, infinitives introduce phases, then direct movement of an OM from the infinitive to the matrix v would violate phase theory. In what follows, we show that what needs to be said to permit affix-raising does not endanger any part of our analysis of argument affix placement.

4.1 Why is argument affix raising possible?

     Argument affix raising out of infinitives, typically described as clitic-climbing in the literature, is often posited to result from 'restructuring', which is either treated as a rule that renders the infinitive a clausemate of the matrix verb in one form or another, or else as a difference in complementation such that the complement of the matrix verb is something less than a CP (e.g., Cinque, 2004). Wurmbrand (2001) suggests that the class of restructuring predicates should be divided into two kinds: The 'functional' restructuring verbs that act like auxiliaries and do not take full vP complements, and the 'lexical' restructuring verbs, which also take less than vP complements, but are not located in functional projections. The key feature of such analyses is that the locality domain for argument affixes originating on the infinitive is not bounded by the syntax of the infinitive complement – exactly what is needed to account for Eegimaa affix raising. However in Eegimaa, it appears that every verb that takes infinitival complements permits argument affix climbing, including *xat* 'stop', *jju* 'start', *ban* 'finish' and *ñum* 'might', *mang-* 'want', *ppádden* 'fail', *ñag* 'avoid', *wosen* 'remember', *pinor* when it means 'consider doing something', *fir-en* 'prevent', or *lat-* when it means 'refuse' as illustrated in (55).

(55)   a. Sú-jur   sasu   gu-lal-e   e-ramben-ol.

        CL-girl   CL.DEF   SM.3rd.pl-refuse-PFV   INF-help-OM.3rd.sg

        'The girls refused to help her.'

        b. Sú-jur   sasu   gu-lal-ol   e-ramben.

        CL-girl   CL.DEF   SM.3rd.pl-refuse-OM.3rd.sg   INF-help

        'The girls refused to help her.'

In short, it does not appear that argument affix raising is limited to aspectual, motion and modal verbs, which Wurmbrand (2001) classes as 'functional', but also applies for predicates which Wurmbrand classes as 'lexical', and even to verbs she claims are neither and do not vary in their

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[44] We are only considering interpretations where the benefactive is construed with the lower verb, which is the favored interpretation in these cases.

status as restructuring verbs across languages, such as those meaning 'regret', or in Eegimaa, *ssu* 'be ashamed'. Thus approaches to restructuring that appeal to particular semantic classes of predicates that permit restructuring has limited appeal for the analysis of Eegimaa, but that does not mean that the structural analysis of restructuring phenomena is wrong for Eegimaa.

Infinitival complementation in Eegimaa certainly has some of the features one expects to find in restructuring contexts. Neither PASS nor (almost) any affix above it may occur on an infinitival complement as shown below for PASS, FMR, NEG, HAB…, that is to say, almost no affix outside the inner stem (translations like these require finite complements in Eegimaa).[45]

(56) a. *gu-mang-e   e-sal-'i.
         SM.3rd.pl-want-PFV   INF-sal-PASS
         'They wanted to be praised.'
     b. *gu-mang-e   e-jow-ut
         SM.3rd.pl-want-PFV   INF-go-NEG
         'They do not want to go.'
     c. *Sú-jur   sasu   gu-mang   e-teb-e   e-mmano.
         CL-girl   CL.DEF   SM.3rd.pl-want   INF-carry-HAB   CL-rice
         'The girls want to habitually carry rice.'

It should be noted, however, PASS, NEG and HAB cannot occur on an infinitive when it is in subject position either, which seems to be a more general limitation on infinitive affixation than that imposed by restructuring, as illustrated for NEG in (57a), even though with other noun class markers that nominalize, NEG is compatible, as illustrated in (57b).

(57) a.*E-teb-ut-ol   e-mmano-il   pan   e-bel-en   bú-taj.
         CL-carry-NEG-OM.3rd.sg CL-rice.POSS.3rd.pl   FUT   CL-cause-FMR CL-fight
         'Not to carry their rice for him/her would have caused a fight.'
     b. ga-teb-ut-ol   e-mmano-il   pan   gu-bel-en   bú-taj.
         CL-carry-NEG-OM.3rd.sg CL-rice.POSS.3rd.pl   FUT   CL-cause-FMR CL-fight
         'Not carrying their rice for him/her would have caused a fight.'

On the other hand, there is a contrast with respect to the FMR suffix, which is possible only on infinitival subjects, not infinitival complements.

(58) a. Sú-jur   sasu   gu-mang-en-e   e-teb-*en   e-mmano yai.
         CL-girl   CL.DEF SM.3.pl-want-FMR-PFV   INF-carry-FMR CL-rice   CL.DEF
         'The girls wanted to carry the rice.'
     b. E-teb-en-ol   e-mmano-il   pan   e-bel-en   bú-taj.
         INF-carry-FMR-OM.3rd.sg CL-rice.POSS.3rd.pl   FUT   INF-cause-FMR CL-fight
         'To have carried their rice for him/her would have caused a fight.'

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[45] The only suffix that is not part of the inner stem that can still appear on a complement infinitive is the locative *–ul*. We do not know why it behaves differently, but it does not change the fact that complement infinitives have less structure (are 'hollow' below RLS, as discussed below).

i.   Sú-jur   sasu   gu-mang-e   é-teb-ul   e-mmano yai.
       CL-girl   CL.DEF SM.3rd.pl-want-PFV   INF-carry-LOC   CL-rice   CL.DEF
       'The girls wanted to bring the rice.' OR 'The girls want to bring the rice.'

This suggests that infinitival complements do not include the PASS node or any outer stem affix above it, but takes either only VoiceP (lower than PASS, as proposed above), where the EA is introduced, or perhaps only vP. The v is necessary because RCM and RFM must be able to form complex v and front within an infinitive, where RCM and OM do not raise, but OM is stranded finally, as in (54c). Moreover, CAUS can occur in an infinitive, which is further evidence that v must be present, even when affix raising occurs as in (59b).

(59) a. gu-lal-e   e-bog-en   u-ññil   wawu
   SM.3rd.pl-refuse-PFV INF-dance-CAUS CL-child CL.DEF
   'They refused to make the children dance'.

  b. gu-lal-il   e-bog-en
   SM.3rd.pl-refuse-OM.3rd.pl INF-bog-en
   'They refused to make them dance.'

Our data is consistent with the assumption that VoiceP is not present in infinitives and vP is, and if so, then there is no phase between the complement infinitive and the matrix verb.

   This conclusion leads to the prediction that there should be no object control structures in Eegimaa, insofar as a complement infinitive could not have a PRO argument introduced in VoiceP. This prediction is false insofar as verbs like *yangen* 'ask-to-stop' can take infinitive complements

(60) a. W-aare wawu   gu-yangen-or-e   e-jel-ol.
   CL-woman CL.DEF   SM.3.PL-ask.to.stop-RCM INF-insult-OM.3rd.sg
   'The women asked each other to stop insulting him/her'

Insofar as (60) is possible, we would expect that the restructuring analysis is wrong for such cases and the complement of this verb must contain VoiceP, which in turn predicts that affix raising should be blocked in such cases. This turns out to be the case.[46]

(61) a. *W-aare   wawu   gu-yangen-or-ol   e-jel.
   CL-woman   CL.DEF   SM.3rd.pl-ask.to.stop-RCM-OM.3rd.sg INF-insult
   'The women asked each other to stop insulting him/her.'

   Another fact in favor of the restructuring analysis is that no PP can intervene between the matrix verb and its infinitival complement, as illustrated in (62), and in this respect infinitive complements differ from full tensed clauses, as the contrast in (63) shows.

(62) a. Na-llig-e   é-kkulum bi y-ang-il.
   RLS.SM.3rd.sg-try-PFV INF-crawl to CL-house-POSS.3rd.pl

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[46] There are cases that appear to be split raising, where only one of two argument affixes is attached to the matrix verb and the other to the infinitive. However the higher argument affix is always BEN, which suggests that the BEN is actually introduced in the higher clause.

i.   gu-mang-or-e   e-sal-oro
   SM.3rd.pl-want-RCM-PFV INF-praise-RFM
  *'They wanted to praise each other for their own benefit.'
  'They wanted to praise themselves for each other's benefit.'

It appears to be the case that if one argument affix does not raise, then no other argument affix can. This would be consistent with the possibility that instances where affix-raising out of infinitives does not take place are infinitive complements with a VoiceP and a subject control analysis. We have not explored this possibility.

'S/he tried to crawl to their house.'

      b.*Na-llig-e   bi   y-ang-il   é-kkulum

        RLS.SM. 3rd.sg- try-PFV to   CL-houaw-POSS.3rd.PL   INF-crawl

        'S/he tried to crawl to their house.'

(63)   a. Gu-jog-e   ni fú-kkuj-um   fafu   búox   Mari

        SM.3.pl-decide-PFV PP CL-wrestle-LOC   CL.DEF   COMP Mary

        na-ar-o   á-yab-o

        SM.3.SG-be.good-IRM SM.3.SG-marry-IRM

        'They decided at the arena that Mary should marry.'

Finally, long passive is possible in Eegimaa.

(64)   Sú-otor   sasu   si-llig-en-i'   e-ccokkor.

        CL-car   CL.DEF   SM-try-FMR-PASS-try   INF-repair

        'The cars were tried to repair.'

Long passive is expected in restructuring contexts based on two assumptions: First, that no phase boundary blocks movement from DO of 'repair' to the matrix clause and second, that EA of 'repair' is not realized within the infinitive complement at all, or else we might expect the agent (causee) of the infinitive to fill the matrix subject position instead of the DO of the infinitive complement. In other words, if Voice introduces the EA of transitive verbs, then that node should be missing in Eegimaa restructuring contexts.

        Although we have no insight as to why the distribution of restructuring in Eegimaa is not lexically restricted in the way Wurmbrand (2001) and others describe, the syntactic analysis of restructuring as complementation of a unit less than a phase seems amply supported.

4.2 How affix raising is derived

        It is now possible to show that our analysis delivers just the right results once we take infinitival complements to be vPs and not VoicePs in Eegimaa where affix-raising is possible. First, however, we show how ISM applies within an infinitive, as it must for our analysis to go through.

        In our analysis, RCM and RFM attach to v, so the infinitival complements which contain them could not be smaller than vP, a fact consistent with the conclusion that CAUS is a flavor of v. Moreover, the landing sites we assume for RCM/RFM and OM when affixes do not raise is also v. We must assume, however, even though all of the outer stem affixes are missing in Eegimaa infinitive, RLS (without SM, which the INF noun class marker replaces) is still present as the indirect trigger for ISM. We identify the RLS node in infinitives as the position of the infinitival prefix (typically the prefix *e-*, perhaps unspecified for the realis value). In other words, restructuring infinitives are hollow, in that there is nothing in the space between RLS and v. Thus ISM applying in an infinitive *e-sal-or-ol* from (54c), repeated below, will produce the structure schematically presented in (65), where complex v is formed with RCM originating in an argument positions below vP. The OM, also originating in an argument position below vP, has adjoined to vP and is stranded there when complex v moves to RLS.

(54)   c. Gu-mang-e e-sal-or-ol   (Unraised RCM and OM)

        SM.3rd.pl   INF-sal-RCM-OM.3rd.sg

They wanted to praise him/her for each other.'
'They wanted to praise each other for him/her.'

(65)
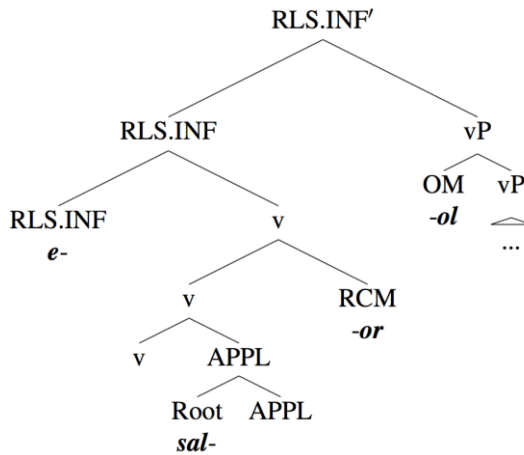
In infinitives that have VoiceP, the complex v will have to stop in Voice before raising to RLS to respect the phase boundary. Except for the absence of VoiceP, the derivation that produces (65) is just like the one we see in mono-clausal finite sentences.

The only difference between the matrix clause output in affix raising cases and the infinitival output in (65) is that RLS hosts finite SM, e.g., in examples like (52b), repeated below.

(52) b. gu-mang-or-ol   e-sal   (Raised RCM OM)
       SM.3rd.pl-want-RCM-OM.3rd.sg   INF-praise
       'They want/ed to praise him/her for each other.'
       'They want/ed to praise each other for him/her.'

The argument affixes originating in the infinitive simply bypass the lower v containing -*sal* (for RCM and RFM) to attach to the matrix v *mang-* and the OMs originating in the infinitive skip the lower vP and go directly to the matrix vP. ISM can still take place in the infinitive (to the infinitival RLS position), but without the argument affixes which have raised to the matrix clause. All of the generalizations about affix ordering discussed in section 3 are thus preserved on the matrix verb in a restructuring context.[47]

Our analysis of affix climbing now also makes predictions about reduplication patterns. If the matrix v is reduplicated, then all and only the affixes within the matrix inner stem should appear. Reduplication of the infinitive is not possible,[48] as shown in (66a), but when there is a raised OM and the matrix inner stem is reduplicated, as in (66c) the reduplicated verb is to the

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[47] There are some undesired derivations that we do not rule out. For example, since we do not treat the Head Movement Constraint as a principle in section 6, our analysis would permit the infinitival v to raise to the matrix v, which is not possible. This suggests that there are classes of movements that respect HMC and other classes that do not, but one would then hope that the movement classes could be predicted (e.g., the higher Root would not be an immediate sister to v if the lower Root moves there first, perhaps a failure of 'verbalization'). We leave this question for future research.
[48] Any account will have to include a way to block inner stem reduplication in infinitives or filter such outputs. Our diacritic would have to be made sensitive, for example, to being in the scope of an infinitival marker.

right of the OM and does not include a reduplicated OM. Finally, (66d) shows that when the raised combination is RCM and OM, the RCM reduplicates with the inner stem, but the OM does not.

66a)*gu-mang-e   e-sal-ol-sal
    SM.3rd.pl-want-PFV   INF-praise-OM.3rd.sg-praise
    'They really want/ed to praise him/her.'
  b) gu-mang-mang   e-sal-ol
    SM.3rd.pl-want-want   INF-praise-OM.3rd.sg
    'They really want/ed to praise him/her'
  c) gu-mang-ol-mang   e-sal
    SM.3rd.pl-want-OM.3rd.sg-want   INF-praise
    'They really want/ed to praise him/her.'
  d) 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.'
    'They really want to praise him/her for each other.'

Notice that it is hard to imagine how a remnant movement version of ISM could ever derive these patterns without a rich set of unmotivated phrasal movements, since phrases containing any argument structure would include copies of the argument affixes in their base positions for both RCM/RFM, which are reduplicated, and OMs, which are not, i.e., spell-out of the full vP copy would produce the wrong result.

These affix-climbing phenomena show the autonomy of the argument affixes from the lower verb and confirm the success of our analysis for predicting the ordering restrictions discussed in section 3. All that it has been necessary is to assume that argument affix raising is enabled by a restructuring analysis for which there is ample evidence.

5.0 Adverbial/aspectual interpretations of RFM and RCM

Our account of why the inner stem is different is that it contains the innermost stem and argument affixes that attach to v rather than vP. But why are RFM and RCM different from OMs in just this way? A reviewer suggests that these affixes are perhaps not argument affixes at all, and one plausible class of affixes they may belong to is an expanded class of voice affixes. If so, what would be at stake is not whether or not ISM exists, but rather whether there is a better alternative to our account of how the inner stem is built. Expanding on this suggestion, one could imagine a semantically-oriented account that identifies the inner stem as a low voice-aspect domain and some syntactic execution of this analysis would target this unit. Such an analysis would still have to face questions about linear ordering within the inner stem and correspondence to BEN and IO interpretations derived in our account by Shortest Move and it would have to answer the objections about correspondence to argument positions in section 3, but it might be thought to have the advantage of offering a better account of the adverbial uses of RCM and OM.

Let us consider RCM and RFM more closely with the 'voice analysis' in mind. Unlike OMs, they are invariant, as voice affixes tend to be, though the same is true in Bantu and RFM appears to behave more like OMs in those languages (they are both prefixes, but see Diercks and Sikuku, 2015), so this fact is not decisive. There is evidence that RCM and RFM are not

detransitivizing in Eegimaa, however. Recall that CAUS does not attach to transitives and that remains true if the DO is an RCM or RFM, as earlier shown by (44a), repeated below.

(44) a. w-aare   wawu   gu-sal-en-or-i'
         CL-women DEF.3rd.pl   SM.3rd.pl-praise-REP-RCM-PASS
          'The women were praised repetitively for each other'
         *'The women were made to praise each other.'

If RCM were detransitivizing here, then 'praise' would be a candidate for causativization, so RCM must not be a detransitivizer. However, it is not always clear that RFM and RCM affect argument structure at all in some languages, even RCM in Bantu (see Baker, Safir and Sikuku, 2013), insofar as RCM in Lubukusu can co-occur with a full anaphor in direct object position. The latter possibility does not exist in Eegimaa (there are no phrasal reflexives or reciprocals in Eegimaa, however, so it is impossible to test), but on the whole, Eegimaa RFM and RCM appear to act like they satisfy argument slots, not least because their ordering determines which argument they affect, and, unlike Lubukusu, RCM and RFM cannot apply to the same thematic argument. Nonetheless, a counter-analysis might be built on the assumption that RCM and RFM are low voice heads (in a richer theory of voice heads) that are part of other low aspectual and adverbial affixes that are below or just above v on the verbal spine. In short, the voice analysis for the adverbial readings has serious drawbacks by comparison with our argument affix analysis, in part for reasons developed in section 3, but we see it as a potential alternative to our analysis that addresses questions we do not.

Recall that we call these affixes 'RFM' and 'RCM' because of the role they play as argument affixes, but these affixes are morphologically restricted in the same way when they correspond to non-argument meanings, that is, they still have to affix to the same host, namely, (complex) v, and they are still suffixes, even though they are not in complementary distribution with each other: Non-argument RCM/RFM can co-occur with argument RCM/RFM.

The RFM allows an emphatic usage.

(67) a. na-tey-oro
         SM.3rd.sgl-ran-RFM
         'He ran himself.' (either without assistance or in contrast to everyone else)
         'He ran for himself.'
      b. gu-tey-oro Mary
         SM.3rd.pl-ran-RFM Mary
         'They ran for Mary themselves.

The emphatic adverbial readings are always available, unless there is no other affix to correspond to a necessary argument (e.g., if RFM is the only possible argument corresponding to the direct object) and the BEN reading is always available as well, though the reading is one or the other, that is, the RFM in (67a) cannot be simultaneously BEN and emphatic. When a full DP argument is present for BEN, only the emphatic reading for the RFM is possible in (67b).[49] This is expected because *Mary* must have a thematic role and so the RFM can only have a non-

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[49] Julie Legate (personal communication) suggests that the emphatic reflexive RFM is generated within the EA and moves as full argument RFMs do subsequently. This is a possible analysis, but questions of ordering and Shortest Move would arise that would require additional investigation based on what is usually marginal data. We leave this possibility for future research.

argument reading. Sequences of the form RFM-RFM (-*oro-oro*) are strongly disfavored, even where plausible readings should be possible, but not if an RCM intervenes (see below).

The RCM has at least three non-argument readings, as mentioned earlier, including 'together', 'simultaneously', and 'continuously'. The 'continuously' reading does not require a plural subject (as the other readings do).[50]

(68)   a. na-sal-or-il

      SM.3rd.sg-praise-RCM-OM.3rd.pl

      'S/he praised them continuously.'

    b. na-sal-or-oro-il

      SM.3rd.sg-praise-RCM-RFM-OM.3rd.pl

      'S/he praised himself/herself continuously for them.'

      'S/he praised them continuously for him/herself.'

Moreover, *or-or* sequences are not blocked, even where one (or both) have adverbial readings.

(69)   a. Gu-sal-or-or-e

      SM.3rd.pl-praise-RCM-RCM-PFV

      'They praised each other simultaneously/continuously/together.'

    b. Gu-tiñ-or-or-e   su-ol

      SM.3rd.pl-eat-RCM-RCM-PFV   CL-fish

      'They ate fish together continuously.'

Where RFM and RCM are present in sequence and only one of them corresponds to an argument, then either one can be taken to be the argument, a direct object in (70).

(70)   Gu-sal-oro-or-e

      SM.3rd.pl-praise-RFM-RCM-PFV

      'They praised themselves continuously/simultaneously/together'

      'They praised each other themselves (no one else did).'

If RCM or RFM co-occur with an OM, the OM must always have a thematic role, be it BEN or DO, for example, but the RFM/RCM can optionally correspond to an argument or adverbial reading, as long as the thematic requirements of the host verb are met.

(71)   Gu-sal-or-ol

      SM.3rd.pl-praise-RCM-OM.3rd.sg

      'They praised each other for him

      'They praised him for each other

      'They praised him simultaneously/continuously/together.

If the OM is present to insure that one of the BEN or DO arguments is saturated, it permits us to test whether the order of RFM and RCM affects which arguments they can represent.

(72)   a) Gu-sal-or-oro-ol

      *'They praised him simultaneously/continuously for their own benefit

      'They praised him themselves for each other's benefit.'

      'They praised themselves simultaneously/continuously for his benefit.'

      'They praised each other themselves for his benefit.'

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[50]For some reason, *na-sal-oro-or-il* (RLS.SM.3rd.sg.-praise-RFM-RCM-OM.3rd.pl, 'S/he praised herself/himself continually for them') is rejected under any interpretation, though it is possible if the SM is plural, as in *gu-sal-oro-or-il*. We do not understand the absence of the 'continuously' interpretation when the plural BEN OM is present.

b. gu-sal-oro-or-ol
      'They praised him simultaneously/continuously for their own benefit.'
   *'They praised him themselves for each other's benefit.'
      'They praised themselves simultaneously/continuously for his benefit.'
      'They praised each other themselves for his benefit.'

The generalization appears to be that if one of RFM and RCM must correspond to BEN, then it is the first of these two affixes. Note, however, when three affixes of the RFM/RCM type are consecutive, consultants find the sentences difficult to process.

   The generalizations that we garner from these facts about adverbial RFM/RCM do not appear straightforward in our approach. For example, the option to take either of the two RFM/RCM in sequence as the DO and the other as adverbial is consistent with the view that adverbially/aspectually interpreted affixes are not ordered by Shortest Move, perhaps because only one of them is moving from an argument position. The 'BEN first' generalization for RCM-RFM or RFM-RCM sequences is only preserved if there is some reason to ignore the ordering of RCM/RFM with adverbial readings.

   It is notable, however, that none of the readings for RCM are viewpoint aspect readings, that is, they only describe how the event unfolds and the nature of the participation of the thematic arguments, not whether or not the event is complete with respect to some time index. The scopal relation of viewpoint aspect (relating to speech time) as higher than situational aspect discussed by Rice (2000) is thus preserved in our representations. Rice also suggests that affixes that do not interact scopally with each other may not be ordered by the scopal hypothesis with respect to each other.[51] We have not found cases where reversal of affix order by an adverbial or aspectual affix is possible in such a way that the result is acceptable and scope is altered. Insofar as the 'continually' reading is semelfactive in Rice's terminology, involving repetitions of the same action, she regards it as sub-situational, thus a particularly low affix on the clausal spine. The same could be said of reversative and repetitive in the innermost stem, which alters only the direction (and sometimes the result) of an action, but does not situate the action or the event in sequence with other events or with respect to reference time. The emphatic reading of RFM can be contrastive but like the sociative (together) reading of RCM, RFM could be understood to limit the participants of an act or event, that is, it can mean that 'x did it alone'. The contrastive reading of RFM would appear to have wide scope, that is, scope outside of vP, but this may be independent of affix order generalizations, since contrastive readings are possible even for syllables within words (e.g. 'The cave did not have staLACtites, it had staLAGmites.', see Arnstein, 2001). Thus it is possible, though we do not attempt it here, that there may be some semantic way to characterize the inner stem unit. Nonetheless a number of questions about how the inner stem is formed remain open, especially as regards scopal interactions that may be possible internal to the inner stem.[52]

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[51] See also Stiebels (2003), who examines a range of possible scopal relations between affixes, though she does not examine relations between reciprocals and reflexives, or reciprocals and adverbs, or passives and adverbs which are the relations most pertinent here.

[52] There is no indication that the non-argument interpretations of RCM interact scopally with APPL but it is conceivable that they could interact scopally with CAUS. Our attempt to test this ran into logistical problems, but we suspect that both readings are possible. If so, we don't have any structural account of how this is determined.

Another, clearer fact suggests, however, that the argument affix analysis of –*or* is not only correct, but distinct from the 'continuous' affix, in so far as -*or* meaning 'continuously' only has scope over the clause that it is in (recall that PFV and OM are incompatible).

(73)   a. gu-mang-e   e-sal-or-ol
         SM.3rd.pl-want-PFV   INF-praise-RCM-OM
         'They want to continuously praise him/her.'
        *'They continuously want to praise him/her'
         'They want to praise him/her for each other.'
         'They want to praise each other for him/her.'

       b. gu-mang-or-e   e-sal-ol
         SM.3rd.pl-want-RCM-PFV   INF-praise-OM
         *'They want to continuously praise him/her.'
        ??'They continuously want to praise him/her.'
         'They want to praise him/her for each other.'
         'They want to praise each other for him/her.'

Eegimaa has specific verbs often used to render the idea of continuously wanting to do something (the most common are ***e-çelor*** and ***e-llettor***), so it is unlikely that the meaning marked with ?? would be rendered with this locution, but it does not seem to consultants to be an impossible reading. For our purposes, however, what is significant is that the adverbial reading of RCM does not raise the way that argument affixes do, suggesting that their incorporation into v is more like that of APPL than an argument affix. It does not follow from our account that head RCM should move differently from argument RCM with respect to Shortest Move, however.

One final wild card in our analysis is the affix –*ali*, which means 'early' (ERL). ERL appears in the inner stem following both innermost stem affixes (e.g., (74b)) and RFM/RCM (e.g., (74c) and (74d) and before all of the outer stem affixes (such as PFV, HAB and PASS), but unlike the outer stem affixes, it also reduplicates (74f), i.e., it is part of the inner stem.

(74)   a. Na-pos-áli-e   w-añ   wawu
         RLS.SM.3rd.SG-wash-ERL-PFV   CL-cloth   CL.DEF
         'S/he washed the clothes early.'

       b. Na-pos-o-áli-e
         RLS.SM.3rd.SG-wash-IRM-ERL-PFV
         'S/he washed (himself/herself) early.'

       c. Na-pos-oro-áli-e   w-añ-ol
         RLS.SM.3rd.SG-wash-RFM-ERL-PFV   CL-cloth-OM.3rd.POSS
         'S/he washed the clothes by himself/herself early.'

       d. Gu-pos-or-áli-e   w-añ-il
         SM.3rd.pl-wash-RCM-ERL-PFV   CL-cloth-OM.3rd.POSS
         'They washed each other's clothes early.'

       e. W-añ   wawu   u-pos-áli-i'-pos
         CL-cloth   CL.DEF   CL-wash-ERL-PASS-wash
         'The clothes were washed early.'

       f. Gu-pos-áli-e-pos-áli   w-añ-il
         SM.3rd.pl-wash-early-HAB-wash-ERL   CL-cloth-OM.3rd.POSS

'They habitually washed their clothes early.'

It is not clear what the significance of this is for the voice analysis, insofar as it is not clear how ERL fits with whatever semantic generalization is to be attempted to characterize the inner stem. Apart from our assumption that ERL is below PASS (and so travels with the inner stem), we have nothing more to say about it.[53]

This partial foray into adverbial readings gives us at least enough information to show what a successful theory would have to account for and so it is possible to set the bar for what an alternative theory might do better. For example, to execute a voice analysis syntactically, the same two options arise with respect to whether ISM is remnant vP movement or movement of complex v. The problems of the remnant movement approach would remain for OMs and full arguments, as these would somehow have to be excluded from reduplication, while all the other inner stem aspectual/adverbial affixes would have to leave copies that can be reduplicated in the posited vP or v' trace left by ISM. The difference in climbing effects would require an argument/non-argument distinction for –or, but it is less obvious how that distinction can be made in a theory that never treats –or as an argument affix.

In short, the potential disagreement would be about how the inner stem is formed before ISM, not whether or not ISM is the right analysis, insofar as the motivations for ISM remain. Beyond these remarks, we have no explanatory proposal about how the adverbial readings of RCM/RFM, should be integrated with our analysis of affix sequences of RCM and RFM. However this is done, inner stem affixes with non-argument interpretations cannot disrupt the order of argument interpretation for RFM and RCM and in our approach that order is enforced by Shortest Move applying to arguments. As our remarks above show it is not obvious how any other theory could fare better for non-argument affix ordering, we will henceforth set alternative approaches to the formation of the inner stem aside.

6.0 What Eegimaa stem structure requires of morphosyntax

Ever since Baker's (1988) argumentation that (at least some) word-internal morphology is derived by mechanisms of head movement that apply in syntax, respecting constraints on syntactic operations, there have been an enormous number of studies that have also explored this premise (see Marantz, 2013, for a recent summary), and our proposals are within this tradition. In particular, we rely on a number of syntactic assumptions about head movement, about argument structure, about phases, about spell-out, and finally we rely on assumptions about the relationship between syntax and morphology, and the nature of post-syntactic morphological operations. In this section we explain how our assumptions are consistent with theoretical commitments that have been independently proposed for other phenomena. We also flag assumptions we make that would appear to compromise theories in which our analysis, or some version of it, could not easily be instantiated. We have already indicated that we are committed to a particular version of the compositional structure of the verbal spine, where the maximal representation of the stem below PASS is (75) (arguments italicized) (that CAUS=v is not posited here as universal).

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[53] A reviewer suggests that –ali does not change any aspectual property of the event and so there does not appear to be any reason to assume that it should be as high in structure as HAB or PFV

(75)   [PASS [*EA* Voice [v(.CAUS) [*BEN* [APPL [Root *DO*]]]]]]]

We also argue that the varieties of head movement we employ are elegantly captured within minimalist assumptions about internal Merge and copy theory as they apply to word-internal units, given a plausible account of what Spell-out and surface morphology are (and aren't) capable of.

6.1 Head movement

We have employed four sorts of head movement operations that are at least analytically distinct, listed in (76a-d) with schemas presented for each sort of movement, and we present in (77) our assumptions about the timing (sequence of operations) that we have assumed (where '(…)' in (76d) and (76d') allows for intervening heads like HAB, FMR, PASS, etc.)

(76)   a. Incorporation operations forming complex v
           $[_{XP} …X [_{YP} …Y…]] \rightarrow [_{XP} …[_X X \mathbf{Y}] [_{YP} …Y…]]$
         b. Cliticization to complex v by RCM and RFM
           $[_{vP} …[v\text{-Root}]… [_{RootP} Root RCM]] \rightarrow [_{vP} …[_v [_v v\text{-Root}] \mathbf{RCM}] … [_{VP} Root RCM]]$
         c. Cliticization to vP by OMs
           $[_{vP} v (…) [Root OM]] \rightarrow [_{vP} \mathbf{OM} [_{vP} v (…) [Root OM]]]$
         d. ISM: Complex v movement to RLS restructuring infinitive
           $[_{RLSP} RLS [(…) [_{vP} [[_v v\text{-}x\text{-}x...]…]] \rightarrow$
           $[_{RLSP} RLS \mathbf{[_v v\text{-}x\text{-}x…]}] [(…) [_{vP} [[_v v\text{-}x\text{-}x…]…]]]$
         d'. ISM: Voice-complex v movement to RLS in matrix finite clause
           $[_{RLSP} RLS [(…) [_{VoiceP} EA [Voice [v\text{-}x\text{-}x...]]]…]]] \rightarrow$
           $[_{RLSP} RLS \mathbf{[_{Voice} Voice\text{-}[_v v\text{-}x\text{-}x…]]} [(…) [_{vP} EA [_{Voice} Voice\text{-}[_v v\text{-}x\text{-}x…]…]]$

(77)   Timing:
         a. complex v is formed
         b. cliticization of RCM/RFM to complex v
         c. cliticization of OM(s) to vP (any time after v is merged)
         d. Complex v incorporates to Voice if Voice is present.
         e. ISM to RLS (after RLS is merged)

The incorporation operation that forms complex v before argument affixation is identical to what was standard in theories of head movement internal to a word at least since Baker (1988) and is formally an instance of (76a). If (complex) v head-adjoins to the Voice node introduced in 3.5, then that is formally the same as (76a). Cliticization to a verb has been analyzed as movement at least since Kayne (1975), but the target of cliticization is often assumed to be a head, as modeled in (76b), rather than adjunction to an XP, as in (76c) proposed here for OMs. Treating OMs as ambiguous between phrasal categories and heads, however, might allow them to adjoin to vP without creating a head-complement construction, as desired, and this approach has some support in the literature (see Roberts, 2010, for discussion and references). ISM is movement to a head that adjoins to another head, and so it is an instance of (76a), but the difference between the incorporation operations forming (76a) and complex v to RLS, as in (76d), is that ISM can skip intervening heads, thus violating the Head Movement Constraint (HMC). However ISM does not violate the Phase Impenetrability Condition (PIC), which prohibits movement across phases from a non-phase-edge position, since v (perhaps after incorporating into Voice) is still in the lower
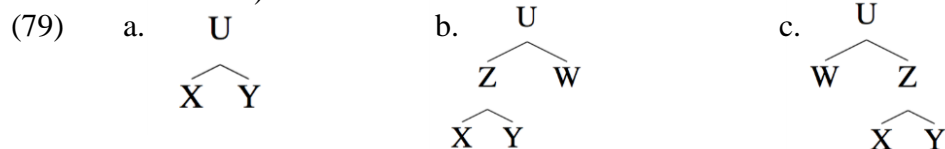
43

phase edge, hence accessible to operations within the maximal projection of the next higher phase node. As mentioned earlier, Roberts (2010) has argued 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 PIC is respected.[54]

Part of the motivation for remnant movement accounts over head-movement accounts is that head movement violates Extension (Chomsky, 1995), but we believe that there are independent reasons to modify Extension and those same modifications allow head-to-head adjunction in exactly the matter employed here (and more generally in the literature). Head movement by affixation to another head is not an adjunction to the highest node in the tree, and so head movement violates any version of Extension that requires each instance of Merge to treat the undominated node as a term. The key intuition of Extension, however, is that new operations applying to a phrase marker apply at the top of the tree (i.e., movement is not anticyclic), and to preserve this intuition, but permit head-adjunction, we adopt Safir's (2010) revision of Extension, which we rename here.

(78)   Peak Novelty Condition (PNC)
        If X is the undominated node after an instance M of Merge, then X must immediately dominate a node that it did not immediately dominate before M.

If an instance of Merge applies conventionally to attach X to Y, then a new undominated node U is introduced, and the new node will necessarily immediately dominate a node that it did not immediately dominate before because it did not exist before, as in (79a) (whether Merge is internal or external).

(79)   a.   U   b.   U   c.   U
             / \   / \   / \
            X   Y   Z   W   W   Z
                             / \   / \
                            X   Y   X   Y

However, PNC also permits head adjunction to another head because the node created by that instance of Merge will be new (Z).[55] Thus the undominated node that formerly immediately dominated the head Y will now immediately dominate this new node, as in (79b) (even if Z is a projection of Y). Safir also motivates PNC by appeal to two other sorts of Merge that seem to require the exact same loosening of what counts as the top of the tree, namely, tucking in and late adjunction.[56] Tucking in, for example, which was first introduced by Richards (1999) in his

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[54] We are setting aside the possibility of treating ISM as successive excorporation that otherwise respects HMC, and though such a proposal is not ruled out by our assumptions so far, it opens excessively descriptive possibilities, and so we are avoiding any reliance on it.

[55] What counts as a 'new' node is nuanced here. Standard practice is to consider a node created by adjunction to be a repetition of the same node or a segment of the same node. In Safir (2010) and (forthcoming), a problem for copy theory introduced by numeration indices (the need to calculate whether sets of heads within two copies share all the same numeration indices at PF) is solved by introducing term indices instead, which only introduces unique indices on terms of a merge operation, but not on what immediately dominates the outcome of merge. Penultimate merge will then result in a situation where the undominated node will dominate a node with a term index before penultimate merge, but one with no term index after penultimate merge.

[56] Late adjunction, sometimes called late attachment, which is not appealed to in this essay, has been proposed as Merge of a phrasal category with a constituent that has been moved (e.g., in Lebeaux, 2009, but first proposed by him in 1989).

account of superiority effects, is still altering a node immediately dominated by the undominated node, as in (79c), and we have employed this assumption in our account of Shortest Move, while late attachment, as employed by Lebeaux (2009), Chomsky (1995), Safir (1999), Takahashi and Hulsey (2009) and Fox and Nissenbaum (2004) is formally identical to head adjunction except both X and Y are phrasal. PNC maintains the orientation of Merge toward the top of the tree and forbids the formation of (80), for example, where X is merged within U without altering Q or R, that is, U dominates Q and R as it did before the operation.[57]

(80)　　　 *U
　　　　　／＼
　　　 Q　　R
　　　　　／＼
　　　　 W　 Z
　　　　　　／＼
　　　　　 X　Y
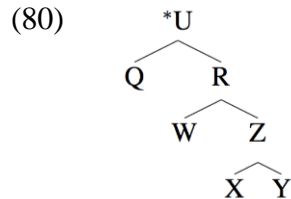
The fact that head-to-head adjunction is a violation of the first version of Extension was one of the reasons that motivated proposals to eliminate head movement from syntax or force it to be immediately followed by merger (as in Matushansky, 2006), but we have seen that complex v formation is necessary. Complex v is formed by head-to-head adjunction and necessarily *not* by remnant movement, for example, or the reduplication facts of Eegimaa could not be so elegantly accounted for by appealing to the copy left by ISM: The copy left by ISM has no traces in it, as it would have to have if it were formed by remnant movement. PNC in (78), independently motivated to enable tucking in and late adjunction, makes head-to-head adjunction possible as a necessary consequence (and undermines one motivation for remnant movement accounts). That said, we are only arguing against the appropriateness of a remnant movement account for Eegimaa, not against remnant movement in general. Thus we would not rule out an analysis of verb projection raising like that of Koopman and Szabolcsi (2000), but we disagree with them that remnant accounts undermine the need for head-movement.

　　　We have been assuming that all movement applies in syntax and we have not posited any movement that applies in the morphological component (setting aside the person/animacy/hierarchy effects addressed below). However, once we added a diacritic for reduplication into the syntax, one could argue that the same diacritic could trigger post-syntactic ISM without affecting interpretation. After all, we have maintained that however much movement there is within a stem, semantic composition only pays attention to where an affix is first merged and not to any higher copy.[58] It could be that there are quantificational affixes for which movement affects interpretation, but we abstract away from them here (e.g., if neg-raising and wh-affix movement are motivated, they will affect scopal interpretation). Thus post-syntactic movement would appear to be consistent with the view that all of the movements in Eegimaa take place after syntax has been sent to semantic evaluation, as in the Distributed Morphology

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[57] The ill-formed instance of merge that results in the structure in (80) is exactly why a tucking-in analysis for (40) was ruled out. In that case, the PNC rules out adjunction of RFM to v just below the peak node if it is followed by adjunction of RCM to v below the RFM.

[58] Most accounts assume, at least tacitly, that the input to morphology is a structure from which the compositional interpretation can be recovered. This is also true of Hyman's (2003) optimality approach, which appears to assume that the candidates for the best output that are considered are all fully faithful to underlying meaning.

model proposed by Embeck and Noyer (2001).

However, we take the more conventional view that Merge is always limited by (a version of) Extension (here, the PNC), so there is no need to posit additional Merge operations that are not part of the input to semantic interpretation. Insofar as movement in syntax is adequate to generate the representations, the no-post-syntactic-movement approach is more elegant, but it also has the advantage of limiting the burden on acquisition, insofar as children do not have to distinguish between analyses where movement could have taken place in either component. If we reject post-syntactic (upward)[59] movement, then there can be no appeal to semantic triggers in syntax for movement within a stem (since meaning is not affected in these cases); rather we maintain that movement, always regarded here as internal Merge, is completely optional just as external Merge is (Chomsky, 2013, Safir, 2010), but derivations are filtered by output conditions (as in earlier accounts of Move α of the GB era). Such an account would allow for well-formed syntactic structures to be produced which would nonetheless crash in the morphological component because proximity to a morphological host cannot be satisfied (and this would motivate for example, interpreting sisters in one linear order over another if only one order allows an affix to be linearly adjacent to its host).

6.2 On surface morphology

We have assumed that Merge does not apply in morphophonology, but we do rely on processes that take place in morphophonology, including the filtering effect that crashes derivations which do not permit affixes to attach to the hosts they are 'destined' for. In this section we briefly sketch a system that shows that our assumptions are consistent with an approach to surface morphology that confines movement to syntax, and in so doing, we are able to provide a principled account of copy spell-out as it applies to affixes, expanding on our assumption (32), repeated below, which technically does not apply to affixes (since head-adjunctions do not c-command their copies).

(32)   If X c-commands its copy, X', then do not pronounce X'.

While some theories assume head movement adjoins right or left according to the direction of headedness (e.g., in Julien's, 2002, account of incorporative verb raising within the left-headed Bantu spine) or that all adjunction is left adjunction (e.g., as in remnant movement accounts like Kayne, 1994), it is beyond the goals of this essay to fully engage such alternative frameworks here. Nonetheless, we have assumed there is no directionality for head movements, only hierarchical changes; Headedness only emerges as left or right in the morphophonological component. In morphophonology, however, a suffix must end up to the right of what it attaches to, so if there is no way to linearize a tree that places a suffix right adjacent to its host, the sentence will fail by a version of the Stray Affix Filter of Lasnik (1981). Thus triggers for movement (as in Julien, 2002) do not exist in our account, but the need to attach to an appropriate host is what we call an 'indirect trigger'.[60] The indirect trigger for ISM is the need

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[59] Embick and Noyer (2001) propose that postsyntactic movement can be both downward and upward. Our theoretical objection based on acquisition only applies to applications of upward movement in morphology.
[60] Different executions could be consistent with our approach. For example, if languages are specified head final or head initial as the default for linearization in morphology, head-adjunctions could be linearized to the right or left, respectively. No diacritic would be necessary unless a particular affix deviates, such as RLS.SM, which is a prefix.

for Voice or v to be attached to RLS.SM. If ISM does not occur, then RLS(.SM) will be a stray affix and the syntactic output will be filtered accordingly.

We take it to be part of the lexical entry of every morphologically dependent morpheme that it selects its morphological host (h-selection) and that if a morpheme h-selects, it may come with a linearity instruction. Morphemes that h-select are dependent morphemes subject to the Stray Affix Filter. Moreover, any morpheme can be specified for s-selection, which (in the context of the affixes we are treating as syntactic heads) just means that the morpheme has a place on the syntactic verbal spine consistent with its interpretation in a compositional structure. The tension between s-selection and h-selection indirectly triggers movement of dependent morphemes.

(81)   a. Voice s-selects vP
            Voice h-selects RLS (Voice has no morphophonology in Eegimaa)
            Linearity - moot
        b. v s-selects APPLP or RootP (activities or states)
            v h-selects Voice or RLS
            Linearity – suffix (v usually has no morphophonology in Eegimaa, but Eegimaa
             CAUS is an instantiation of v and right adjacent to Root)
        c. APPL s-selects RootP (e.g., high APPL selects for an activity or state)
            APPL h-selects Root
            Linearity – moot (APPL has no morphophonology in Eegimaa)
        d. RCM/RFM fills argument position
            h-selects v
            Linearity – suffix
        e. OM Fills argument position
            h-selects RLS
            Linearity – suffix
        f. CAUS s-selects APPLP or RootP (activities or states)
            CAUS h-selects APPL or Root
            Linearity – suffix
        g. PASS s-selects VoiceP (event)
            h-selects RLS
            Linearity – suffix
        h. FMR, HAB, etc. s-selects VoiceP (or an event built from it)
            h-selects RLS
            linearity - suffix
        i. RLS s-selects event.
            RLS h-selects v
            linearity - prefix
        j. Root s-selects complement
            h-selects one or more of (v, n, a…)

In this system, roots are specified for the list of 'little x' heads that determine their category in morphology and syntax, but this is a detail that could be executed differently. Our notion of

linearization, however, needs explication, as it is crucial to our analysis.[61]

On our account, surface morphology must not allow linear intervention between the h-selector and its host. If the constituent [RLS, v] is linearized as v-RLS in an infinitive, then the linearization of v does not permit it to attach to its host. Linearization requires RLS-v. Since [RLS, v] is formed in syntax, it is a head of type RLS, but for units formed in morphology, we assume (82a-c).

(82)   a. The morphological category of the affix is optionally absorbed by the host it attaches to in morphology.[62]

   b. Syntactic structure is not altered when units are formed by linearization.[63]

   c. h-selection does not percolate.

Thus when v h-selects RLS (and vice versa) and in syntax, [RLS, v], is formed, the output in (83a) is either a v or still a morphological RLS. If it is not a morphological RLS, then host selection will fail for affixes like FMR, HAB and PASS so the option of treating RLS-v as a morphological RLS avoids a Stray Affix Filter violation. The formation of RLS extended by h-selection of suffixes is illustrated in the examples below by superscripted underlining (using an example where Voice and RLS mutually h-select in a tensed sentence.
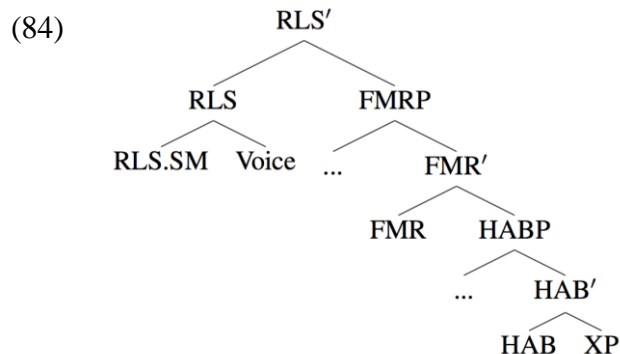
(83)   a. $[\underline{\text{RLS.SM-v}^{\text{RLS}}}]_{\text{RLS}}$

   b. $[\ [\underline{\text{RLS.SM-Voice}}]\text{-}[\underline{\text{FMR}^{\text{RLS}}}\ \text{XP}]_{\text{FMRP}}]_{\text{RLSP}}$

   c. $[[\ [\underline{\text{RLS.SM-Voice}}]\text{-}[\text{FMR-}[\underline{\text{HAB}^{\text{RLS}}}\ \text{XP}]_{\text{HABP}}\ ]_{\text{FMRP}}\ ]_{\text{RLSP}}$

Thus morphological units are formed by linearization cross syntactic boundaries, but do not affect hierarchy or syntactic labeling (or however syntactic category is expressed). Specifiers are silent either because they are copies of DPs (zero in morphology as copies by (32) or because they are not structurally present). The linearized tree in (84) shows no change in structural labeling or hierarchy, even though the underlining that indicates a morphological word in (83c) holds of the morphemes in (84).

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[61] Our treatment of h-selection is entirely stipulative here, but one could easily imagine ways of reducing these stipulations, which come at a cost for learning. For example, functional heads that turn out to be suffixes or prefixes depending on how high the verb moves in a stipulated left-headed or right-headed structure (compare Julien, 2002 for Shona with Rice, 2000 for Athapaskan) may not need to have any linearization instruction, since h-selection only requires adjacency in the absence of a linearization instruction (these would include all the outer stem suffixes in Eegimaa). We require RLS.SM to have a linearization instruction, since movement of (complex) v to RLS in a left-headed structure yields RLS as a prefix.

[62] For the cases considered, it may be possible to limit optional morphological category output to cases where there is mutual h-selection, a question for future research.

[63] This is consistent with our rejection of m-merger as proposed by Halle and Marantz (1993) and employed to justify head movement by Matushansky (2006), insofar as m-merger so conceived erases syntactic structure. Our version of morphological merger does not change structure.

(84)

```
                          RLS′
                        /      \
                    RLS          FMRP
                   /   \        /    \
             RLS.SM   Voice   ...     FMR′
                                     /    \
                                  FMR      HABP
                                          /    \
                                        ...     HAB′
                                               /    \
                                            HAB      XP
```

These assumptions allow us to assume that HAB h-selects morphological RLS even if there are intervening suffixes between [RLS-v] and HAB. HAB simply 'waits' until the unit to its left is an RLS, as that is the only path to a viable output. Using more familiar terms, one could describe morphologically complex RLS as a finite verb and, in this way of thinking, verb affixes morphologically attach to finite verbs (or infinitives, when SM is replaced by CL). Our analysis does not require us to decide whether or not phrases in structures like [XP, YP] are ordered in syntax or morphology, but if we were to suppose that specifiers are linearized to the left of a head and its complement, then the order of heads H1-H2 would be interrupted by a full DP (e.g., in a specifier). When that specifier is not an unpronounced copy, the surface order H1-DP-H2 will be ill-formed, unless H2 h-selects DP. By the same reasoning, PASS and OMs h-select RLS in morphology, forcing their Spec positions to count as empty in morphology.[64]

Our assumption (82c) is crucial in our system because we do not assume that an RLS, once formed in morphology, can continue to h-select. If we allowed this, then RLS could grow by absorbing the affixes that h-select it until RLS is adjacent to v, at which time it would be able to h-select v without any movement of v. This limiting assumption is natural, however, since h-selection is an instruction about a specific morpheme, not an instruction that is assigned to non-simplex stems.

Summarizing so far, we have assumed that linearity instructions (suffix or prefix) are part of the lexical entry of every dependent morpheme and morphological spell-out presumably executes this instruction based on structural and linear proximity visible in morphophonology. Thus post-syntactic morphology must have access to syntactic structure internal to words, at minimum, as is generally assumed for vocabulary insertion within Distributed Morphology.

Now recall that we have appealed to (32) to determine which copy is pronounced when copies are formed, and we noted that for the structures created by head-adjunction, something special would have to be said about c-command if the right result were to be attained. We can now address this issue by appeal to h-selection.

(32)   If X c-commands its copy, X', then do not pronounce X'.
(85)   The only copy of an affix that is pronounced is one that is in a position where h-selection is satisfied.

Note that (85) does not eliminate the need for (32), since (32) does not apply to head adjunctions

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[64] We have not explored this as a way of motivating A-movement by a filtering effect of this kind, but the idea presents itself.

and (85) will not apply to any XP because XPs do not h-select. If a head is inside a constituent that is c-commanded by a higher copy of that constituent, then the lower copy is not pronounced. Then h-selection can only be satisfied for the head in the moved constituent. Thus when (complex) v moves to RLS, only the moved v satisfies an h-selection relation, so only that version of v can be pronounced. Moreover, we can now be more precise about what the reduplication diacritic does: it allows h-selection to be satisfied on more than one instance of v (i.e., it over-rides (85)).

6.3 More on surface morphology

Throughout our paper, we have conformed to the central claim of Distributed Morphology, namely that morphological operations interpret the output of syntactic operations and morphological operations are not themselves syntactic operations. In this respect, we are more strict in disallowing m-merger that eliminates syntactic heads (allowed in Halle and Marantz, 1993), though our perspective is limited to Eegimaa data.

Recall now that in context where the person/animacy/number hierarchy determines the order of multiple OMs, we suggested that some sort of superficial morphological rule might reorder the OMs to match the hierarchy in (24). Such a rule would require an OM with a feature bundle of one sort to be ordered with respect to an OM with a feature bundle of another sort, where there is no phonological or prosodic conditioning.[65] We posited that surface reordering in morphophonology neutralizes the surface difference between distinct structural inputs to morphophonology, hence semantic ambiguity is possible. It is worth noting, however, that if there are indeed 'flipping' rules/operations that reorder two linearly adjacent affixes, and if flipping is self-feeding, then post-syntactic flipping could derive (86c) and then (86d) (underlining indicates the reordering in each stage).

(86) a. Root-A4-A3-A2-A1
      b. Root-A4-A3-<u>A1-A2</u>
      c. *Root-A4-<u>A1-A3</u>-A2
      d. *Root-<u>A1-A4</u>-A3-A2

The derivations in (86c) and (86d), if they were allowed, would require a learner to decide between a movement derivation and self-feeding flippin for non-local displacements, and thus self-feeding flipping is undesirable from the point of view of acquisition as well as basic elegance. If we can block (86c) then we can block any subsequent reorderings, but how can we do so and still allow (86b)? Thus allowing a flipping operation in post-syntactic morphology is dangerous, unless we block the possibility of self-feeding. This can be achieved by making the 'FLIP' operation structurally sensitive.

(87)   Morphological FLIP

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[65] The phenomena of Eegimaa do not seem similar to those discussed by Harris and Halle (2005) or Arregi and Nevins (2012), where word-internal metathesis phenomena involve clitic/non-clitic reversals and the effect is argued to follow from partial reduplication. We have no reason to argue for or against such proposals, or any sort of metathesis that is phonologically conditioned, which are beyond the scope of our investigation, but see Kayne (2009) who argues for a syntactic approach to the Spanish data from Harris and Halle, also on the grounds of avoiding post-syntactic operations with effects that could duplicate those of movement. See also Bobaljik (2015: fn.3) who also notes the potential for affixation relations to superficially mimic head movement.

If X and Y are structurally and linearly adjacent affixes, then FLIP permits them to be linearly adjacent as Y-X.

(88)   X and Y are structurally adjacent if there is a linearization of the structure in which X and Y are contained that allows them to be ordered X-Y.

For example, X and Y are structurally adjacent in [XP, YP] because there is at least one linearization of [$_{XP}$ X, YP] where X and Y are linearly adjacent, namely, the bolded ones in (89).

(89)   **[$_{XP}$ X-[$_{YP}$Y-WP]]**, [$_{XP}$ X]-[$_{YP}$WP-Y], [$_{XP}$ [$_{YP}$-[Y-WP]-X], **[$_{XP}$ [$_{YP}$WP-Y]-X]**

If a language is left-headed, then only the first structure can be linearized, and for the sake of argument, let us assume that headedness direction is independently determined (as Rice does for Athapaskan, which she assumes is right-headed). On these assumptions, only **[$_{XP}$ X-[$_{YP}$Y-WP]]** is a possible output of syntax. FLIP permits X and Y to be ordered Y-X, but FLIP does not affect the syntactic representation. Now consider that (90b) is the only left-headed linearization permitted for (90a), which has no linear order (indicated by the commas between sisters).

(90)   a. [$_{XP}$ X, [$_{YP}$Y, [$_{WP}$ W, ZP]]]
         b. [$_{XP}$ X-[$_{YP}$Y-[$_{WP}$ W-ZP]]]

FLIP can apply to (90b) to reorder X and Y so that the order Y-X-W is possible or it can reorder Y and Z such that X-Z-Y is possible, but *W-X-Y and *Y-W-X are not possible, because W and X are not structurally adjacent once morphology is committed to the linearization that permits X and Y or Y and Z to be linearly adjacent. Thus FLIP is self-bleeding, as desired, as long as rules of morphology do not erase any syntactic structure.

Thus, even if a FLIP operation is responsible for reordering of OMs in Eegimaa according to the person/animacy/plural hierarchy, there is no danger of allowing an operation that replicates the effect of movement beyond single adjacent reversals.[66]

7.0 Conclusion

Our account of the complexities of Eegimaa stem structure, which relies on a variety of head movements at the sub-word level, permits us to unravel the threads that lead to the underlying structure. We have proposed movement of argument affixes targeting adjunction to vP (OMs) and to v (RFM and RCM) and we have also proposed incorporations of heads in the argument structure spine to form a complex v, as well as ISM, which is v movement across intervening heads to RLS. The movements we have posited are not exceptional with respect to the elements that move (are internally merged) or with respect to their landing sites, and basic c-command conditions on these movements are observed (modulo the PNC), but our appeal to long head movement within the stem is relatively novel and, we have argued, must be countenanced as a theoretical possibility if the best analysis of Eegimaa is to be permitted by UG. Our system of h-selection and linearization shows that leaving linear order out of the syntax proper is feasible for our analysis of Eegimaa without too much machinery and plausible assumptions about what morphological information lexical entries can contain. Why RLS h-selects the inner stem remains mysterious, but the evidence in favor of positing the movement that satisfies this requirement in Eegimaa seems overwhelming.

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[66] Iterated flipping amongst OMs could be studied in principle using Eegimaa data, but the facts are difficult to obtain because three OMs are quite marginal when they co-occur on a single stem.

Our structural analysis of Eegimaa verb stem structure has yielded several results for Eegimaa, including (a) reconciliation of Eegimaa affix order to resolve the scope anomaly, (b) derivation of the pattern of verb reduplication from copy theory, (c) predicting the distribution of argument affixes and their interpretations, and (d) showing that the entire system of assumptions is consistent with an affix raising account out of infinitives, once a single enabling assumption about restructuring contexts is made. It is natural to ask whether or not the approach we have developed for Eegimaa can be successfully and elegantly adjusted to provide insight into the morphology of other languages, but must leave such a demonstration for future work and for a venue for where a much longer essay would be appropriate.

Although we rely on post-syntactic morphological operations as part of our explanation and analysis, we appeal only to linear operations that do not alter syntactic structure (i.e., the flip rules, if these are necessary). Such operations may disguise differences in underlying structure, with the result that the output is syntactically, and hence semantically, ambiguous. We have resisted any appeal to operations or analyses that replicate the effects of syntactic movement in the morphological component on the grounds of appeals to theoretical simplicity and learnability. In this respect, we believe our theory elegantly preserves the relationship between underlying composition and surface order that speakers of Eegimaa must be able to produce and decode. In short, we regard the success of our analysis to be important evidence for the existence of 'long' word-internal Merge as a unifying force that can coordinate compositional interpretation, structural grouping in morphology, and surface linearization.

References

Aboh, Enoch O. and M. Dyakonova. 2009. Predicate doubling and parallel chains. *Lingua* 119:1035-1065.

Afranaph Project. Ongoing. Ken Safir, ed. http://www.africananaphora.rutgers.edu/

Afranaph Database. Ongoing. Ken Safir, ed. http://www.africananaphora.rutgers.edu/afranaph-database-mainmenu-130

Alexiadou, Artemis, Elena Anagnostopoulou and Florian Schäfer. 2006. The properties of anticausatives crosslinguistically. In M. Frascarelli (ed.), *Phases of Interpretation*, 187-212. Berlin: Mouton.

Arnstein, Ron. 2001 Parts of words: Compositional semantics for prosodic constituents. Ph.D. dissertation, Rutgers University.

Adger, David, Daniel Harbour and Laurel Watkins, 2009. *Mirrors and Microparameters*. Cambridge: Cambridge University Press.

Arad, Maya. 2002. Hebrew lexical causatives. In Jamal Ouhalla and Ur Shlonsky, eds., *Themes in Arabic and Hebrew Syntax,* 240-266. Dordrecht: Kluwer Academic Publishers.

Arregi, Karlos and Andrew Nevins. 2012. *Morphotactics: Basque auxiliaries and the structure of Spellout*. Dordrecht: Springer.

Baker, Mark. 1985. The Mirror Principle and morphosyntactic explanation. *Linguistic Inquiry* 16.3: 373-415.

Baker, Mark. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.

Baker, Mark, Ken Safir, and Justine Sikuku. 2012. Sources of (a)symmetry in Bantu double

object constructions. In *Proceedings of the 31st Meeting of the West Coast Conference in Formal Linguistics*, Nathan Arnett and Ryan Bennet, eds., 54-64. Somerville, MA: Cascadilla Press,

Baker, Mark, Ken Safir, and Justine Sikuku. 2013. Complex anaphora in Lubukusu. In *Proceedings of the 43rd Meeting of the Annual Conference of African Linguistics*, Ọlanikẹ Ọla Orie and Karen W. Sanders, eds., 196-206. Somerville, MA: Cascadilla Press

Bassene, Alain C. 2007, *Morphosyntaxe du joola banjal, langue atlantique du Sénégal*. Köln: Rüdiger Köppe Verlag.

Bassene, Mamadou. 2012. Morphophonology of Joola Eegimaa. Ph.D. dissertation, U. of Minnesota.

Bassene, Mamadou and Ken Safir. To appear. Theory and description: Understanding the syntax of Eegimaa verb stem morphology. In Jason Kandybowicz, ed., *Africa's Endangered Languages: Documentary and Theoretical Approaches*. Oxford: Oxford University Press.

Bassong, Paul Roger. 2014. Information structure and the Basa'a left peripheral syntax. Ph.D. dissertation. University of Yaounde 1.

Bobaljik, Jonathan. Distributed morphology. Ms., U. of Connecticut.

Chomsky, Noam. 1995. *The Minimalist Program.* Cambridge: MIT Press.

Chomsky, Noam. 2000, Minimalist Inquiries: The framework. In Roger Martin, David Michaels, and Juan Uriagereka, eds., *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89-155. Cambridge: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz, ed., *Ken Hale: A life in language,* 1-52. Cambridge: MIT Press.

Chomsky, Noam. 2013. Problems of projection. *Lingua* 130: 33-49.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: A cross-linguistic perspective*. Oxford: Oxford University Press.

Cinque, Guglielmo. 2004. 'Restructuring' and functional structure. In Adriana Belletti, ed., *Structures and beyond*, 132-191. Oxford: Oxford University Press.

Diercks, Michael, and Justine Sikuku. 2015. Pragmatic effects of clitic doubling: Two kinds of object markers in Lubukusu. Ms., Pomona College and Moi University.

Embick, David and Rolf Noyer. 2001. Movement operations after syntax. *Linguistic Inquiry* 32: 555-595.

Folli, and Heidi Harley. 2007. Causation, obligation and argument structure: On the nature of little v. *Linguistic Inquiry* 2007:197-238.

Fox, Danny and J. Nissenbaum. 2004 "Condition A and scope reconstruction". *Linguistic Inquiry* 35**:**475-485.

Halle, Morris and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In Hale, K., Keyser, S.J., eds., *The View From Building 20*, 111—176. Cambridge: MIT Press.

Harley, Heidi.2013. External arguments and the Mirror Principle: On the distinctness of Voice and v. *Lingua* 125:34—57.

Harris, James and Morris Halle. 2006. Unexpected plural inflections in Spanish: Reduplication

and Metathesis. *Linguistic Inquiry* 36:195-222.

Hyman, Larry M. 2003. Suffix ordering in Bantu: A morphocentric approach. *Yearbook of Morphology* 2002:245-281.

Hyman, Larry M. 2007. Niger-Congo verb extensions: Overview and Discussion. In Doris L Payne and Jaime Peña, eds., *Selected Proceedings of the 37th Annual Conference on African Linguistics*, 149-163. Somerville, MA: Cascadilla Proceedings Project.

Hyman, Larry, Sharon Inkelas, and Galen Sibanda. 2009. Morphosyntactic correspondence in Bantu reduplication. In K. Hanson and S. Inkelas, eds., *The Nature of the Word: Essays in Honor of Paul Kiparsky*, 273-310, Amsterdam: John Benjamins.

Kratzer, A., 1996. Severing the external argument from its verb. In: Rooryck, J., Zaring, L. eds., *Phrase Structure and the Lexicon*, pp. 109—137. Dordrecht: Kluwer Academic Publishers,.

Kandybowicz, Jason. 2007. On fusion and multiple copy spell-out. In *The copy theory of movement*, Nobert Corver and Jairo Nunes, eds., 119-150. Amsterdam: Benjamins.

Kayne, Richard. 1975. *French syntax.* Cambridge: MIT Press

Kayne, Richard. 1994. The antisymmetry of syntax. Cambridge, MA: MIT Press.

Kayne, Richard. 2009. Toward a syntactic reinterpretation of Harris and Halle (2005). Ms., NYU.

Koopman, Hilda and Anna Szabolcsi. *Verbal complexes*. Cambridge, MA: MIT Press.

Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19:336-391.

Lasnik, Howard. 1981. Restricting the Theory of Transformations: A Case Study. Norbert Hornstein and David Lightfoot eds., *Explanation in Linguistics*. London: Longman.

Lebeaux, David. 2009. *Where does binding theory apply?* Cambridge: MIT Press.

Legate, Julie Ann. 2012. Subjects in Acehnese and the nature of passive. *Language* 88: 495-525.

Legate, Julie Ann. 2014. *Voice and v: Lessons from Acehnese*. Cambridge: MIT Press.

Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. In A. Dimitriadis, L.Siegel et. al. (eds.): *UPenn Working Papers in Linguistics*, Vo. 4.2, Proceedings of the 21st Annual Penn Linguistics Colloquium, pp. 201-225.

Marantz, Alec. 2013. Verbal argument structure: Events and participants. *Lingua* 130:152-168

Matushansky, Ora. 2006. Head movement in linguistic theory. *Linguistic Inquiry* 37:69-110.

Nunes, Jairo. 2004. *Linearization of chains and sideward movement.* Cambridge: MIT Press.

Pylkkänen, L., 2008. *Introducing Arguments*. Cambridge: MIT Press.

Rice, Keren. 2000. *Morpheme Order and Semantic Scope: Word Formation in the Athapaskan Verb*. Cambridge: Cambridge University Press.

Richards, Norvin. 1999. Featural cyclicity and the ordering of multiple specifiers. In David Samuel Epstein and Norbert Hornstein, eds. *Working Minimalism,* 127-158. Cambridge: MIT Press.

Roberts, Ian. 2010. *Agreement and Head Movement: Clitics, Incorporation and Defective Goals*. Cambridge: MIT Press.

Safir, Ken. 1999. Vehicle change and reconstruction in A'-chains. *Linguistic Inquiry* 30:587-620.

Safir, Ken. 2010. Viable syntax: Rethinking minimalist architecture. *Biolinguistics* 4: 35-107.

Sagna, Serge. 2008. Formal and semantic properties of the Gújjolaay Eegimaa (A.k.a Banjal)

nominal classification system. PhD dissertation, University of London: School of Oriental and African Studies.

Sagna, Serge. 2010. Issues in noun classification and noun class assignment in Gujojolay Eegimaaa (Banjal) and other Joola languages. *Studies in African Linguistics* 39:1, 2010.

Stiebels, Barbara. 2003. Transparent, restricted and opaque affix orders. In Uwe Junghanns and Luka Szucsich (eds.), *Syntactic structures and morphological information*, 283-315. Berlin: Mouton de Gruyter.

Takahashi, Shoichi and Sarah Hulsey. 2009.Wholesale late merger: Beyond the A/A'-distinction. *Linguistic Inquiry* 40: 387-426.

Travis, Lisa. 1974. Parameters and effects of word order variation. Ph.D dissertation, MIT.

Wurmbrand, Susi. 2001. Infinitives. New York and Berlin: Mouton.