A PHASE-THEORETIC ANALYSIS OF KINYARWANDA MULTIPLE APPLICATIVES[*]

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1.   Introduction

This paper concerns constituency conflicts in Kinyarwanda applicatives. We propose that these cases are parallel to similar conflicts observed in English, which provide evidence for an incremental interpretation of the syntactic derivation (Phillips 1996, 2003). We argue that the Kinyarwanda cases support the view that the derivation is incrementally interpreted phase by phase (Chomsky 2000, 2001).

Like other Bantu languages, Kinyarwanda has a number of applicatives, in which a non-core" argument (benefactive, locative, instrumental, and so forth) is added to the clause. Verbal morphology helps to constrain the semantic interpretation of the added argument. An instrumental applicative is given in (1). This example has an applied argument, *íkárámu* 'pen', and verbal morphology (*-iish*) indicating the instrumental thematic role of this argument.

(1)   Úmwáalímu a-ra-andik-iish-a   íbárúwa íkárámu.
       teacher   he-PST-wrote-INST-ASP   letter   pen
       'The teacher is writing a letter with a pen.'   *K:107*

Examples like (1) appear to be subject to a constituency conflict. As we will show, the instrumental argument semantically modifies an event. It has been argued that such event-modifying applicatives merge with the VP containing the main verb and the direct object (if any), on the assumption that the direct object is the first argument merged with the main verb (Pylkkänen 2002). If this approach is correct, then the semantic constituency of the verb phrase in (1) is as in (2a): the instrumental argument is merged with a VP denoting the letter-writing event.

(2)   a.   [[a-ra-andik-iish-a íbárúwa] íkárámu]
             [[write   letter]   pen]

       b.   a-ra-andik-iish-a [íbárúwa [íkárámu]]
             write   [letter   [pen]]

On the other hand, as is generally the case in Bantu languages, the linear order of arguments in (1) reflects c-command, so syntactic c-command tests such as
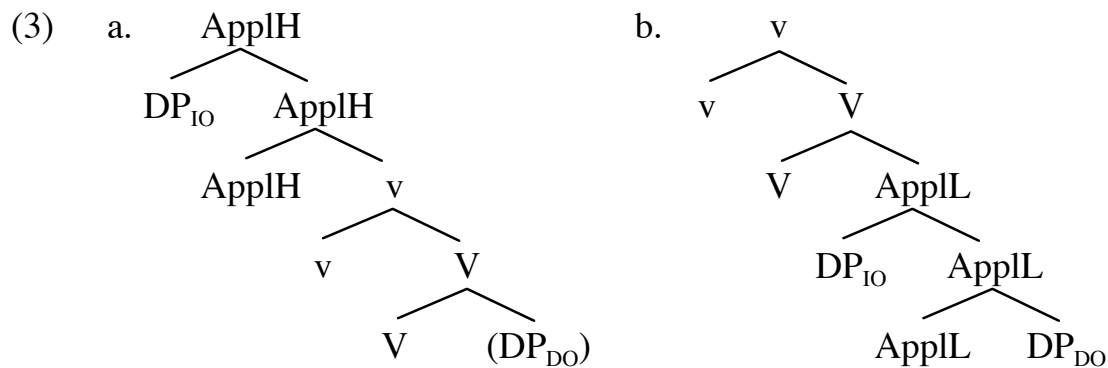
quantifier-pronoun binding support the constituent structure in (2b), where the direct object *íbárúwa* 'letter' c-commands the instrumental argument. On ordinary assumptions, the two structures in (2) are distinct and incompatible.

Constituency conflicts have also been observed in English sentences involving PPs (Ernst 1994; Pesetsky 1995; Phillips 1996, 2003). Phillips (1996, 2003) argues that such constituency conflicts arise because syntactic derivations are constructed incrementally. We propose that a similar analysis accounts for apparent constituency conflicts involving event-modifying applicatives. Such applicatives constitute separate phases (McGinnis 2000, 2001, 2003). Once the *v*P phase is complete, a phasal Applicative Phrase can be merged below it.

2.   A Puzzle involving High applicatives

Pylkkänen (2001, 2002) argues that some applicatives ("High") combine semantically with a *v*P (3a), while others ("Low") relate two DPs (3b); see also McGinnis (2000, 2001, 2003), Rackowski (2002).

(3)   a.   ApplH
         /   \
     DP$_{IO}$ ApplH
              /   \
          ApplH   v
                  /   \
                 v   V
                      /   \
                     V   (DP$_{DO}$)

      b.   v
              /   \
             v   V
                   /   \
                  V   ApplL
                       /   \
                   DP$_{IO}$ ApplL
                             /   \
                         ApplL   DP$_{DO}$

Only High applicatives (e.g. the Kinyarwanda benefactive) can combine with unergatives (4a). Low applicatives like the English double-object construction cannot (4b) — they can combine only with transitives (4c).

(4)   a.   Umugóre   a-rá-kor-er-a   umugabo.
           woman   she-PR-work-BEN-ASP   man
           'The woman is working for the man.'   *K:32*

      b.   I ran *(for/to) Mary.
      c.   I baked (Mary) a cake.

The difference between High and Low modifiers may also have consequences for quantifier scope (Larson 1988, Aoun and Li 1989, Bruening 2001). For example, in (5a), the universally quantified DP *every child* is contained in an event-modifying PP. This DP can take scope above or below the existentially quantified object *a story*: that is, there could be only one story (narrow scope for *every child*) or the stories could vary with the children (wide scope for *every child*). In (5b), on the other hand, the Low applicative has frozen scope: this sentence is false unless a particular child was told all the stories.

(5) a. I told a story for/to every child.
   b. I told a child every story.

Benefactive (6a) and Instrumental (6b) applicatives in Kinyarwanda appear to be semantically High. They can be combined with unergative verbs, as shown:

(6) a. Umugabo   a-rá-som-er-a   umugóre.
      man   he-PR-read-BEN-ASP   woman
      'The man is reading for the woman.'   *K:32*

   b. Umuhíinzi   a-kor-eesh-a   isúka.
      farmer   he-work-INST-ASP   hoe
       'The farmer is working with the hoe.'   *Overdulve 1975:209*

When the two types of applicative combine with a transitive verb phrase, however, the neutral word order is not identical (Kimenyi 1980). The Benefactive precedes the Theme (7a), while the Instrumental follows it (7b).

(7) a. Umukoôbwa a-ra-som-er-a   umuhuûngu   igitabo.
      girl   she-PR-read-BEN-ASP   boy   book
      'The girl is reading a book for the boy.'   *K:32*

   b. Úmwáalímu a-ra-andik-iish-a   íbárúwa   íkárámu.
      teacher   he-PST-wrote-INST-ASP   letter   pen
      'The teacher is writing a letter with a pen.'   *K:107*

Word order in Bantu reflects c-command (Marantz 1993, Ngonyani 1996), so the Theme apparently c-commands the Instrumental in (7b). Quantifier-pronoun binding supports this analysis. As in English, in example (8a) the keys are associated with the doors, but in example (8b) they are not. This suggests that the quantified Theme in (8a) c-commands and binds the possessive pronoun in the Instrumental argument, while the quantified Instrument in (8b) does not c-command the possessive pronoun in the Theme.[1]

(8) a. N-a-fúngul-ish-ije[2]   buri   muryango   úrufunguzo rwáwo.
      I-PST-open-INST-ASP   each   door   key   its
      'I opened each door$_i$ with its$_i$ key.'   *A. Rutayoberana, p.c.*

   b. N-a-fúngul-ish-ije   umuryango wáyo   buri   rufunguzo.
      I-PST-open-INST-ASP   door   its   each   key
      'I opened its$_i$ door with each key$_{j/*i}$.'   *A. Rutayoberana, p.c.*

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[1] The data in (8) should not be used without confirmation, as the tones have not been checked. Alexandre Rutayoberana describes the applicatives in (8) as "old-fashioned" Kinyarwanda. Many speakers prefer a non-applicative construction with a PP Instrument instead.
[2] The form *fúngul* is probably the root *fung-* 'close, fasten' plus the reversive suffix, which Kimenyi (1980:5) gives as *–uur*. One speaker we consulted used *–r* rather than *–l* in this form.

If nothing more is said, these analyses appear to be mutually contradictory. If the Instrumental is a High applicative that combines semantically with a *v*P containing the Theme, the Instrumental should c-command the Theme. Instead, the Theme appears to c-command the Instrumental argument.
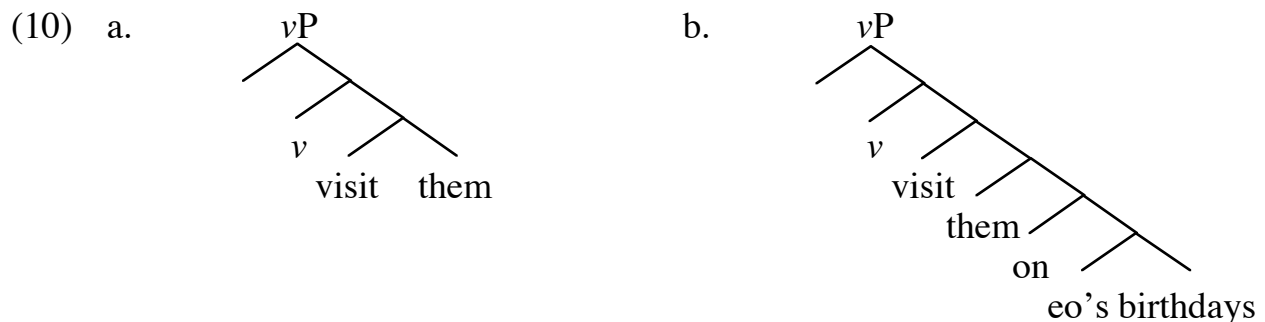
3.   Incremental interpretation by phase

As noted above, constituency conflicts also arise with movement and binding in English PPs. One such conflict is illustrated in (9). In the second conjunct, the fronted component is *[visit them]*. This movement suggests a structure as in (9a), in which there is a constituent containing verb and the direct object, and excluding the PP *on each other's birthdays*. On the other hand, the pronoun *them* licenses the reciprocal anaphor *each other's*. This suggests that the pronoun c-commands the anaphor, yielding a structure such as (9b), in which there is a constituent containing the direct object and the PP, and excluding the higher verb. Again, the two structures are distinct and incompatible.

(9)   John wanted to visit them, and [visit them$_i$] he did *t* on each other$_i$'s birthdays.

      a.   [visit them$_i$] on each other$_i$'s birthdays
      b.   visit [them$_i$ [on each other$_i$'s birthdays]]

VP-fronting in (9a) suggests a left-branching structure, while reciprocal binding in (9b) suggests a right-branching structure. Phillips (1996, 2003) argues that such conflicts arise from an incremental left-to-right syntactic derivation. Under his analysis, the constituent *[visit them]* exists at one stage in the derivation of (9), as shown in (10a). This constituent can establish a movement dependency before the PP is added to the structure. Adding the PP alters the constituency of the clause to yield the structure in (9b), shown in (10b).

(10)   a. [*v*P tree: *v*P dominating *v* "visit" and "them"]   b. [*v*P tree: *v*P dominating *v* "visit", "them", "on", "eo's birthdays"]

      Pesetsky (1995) notes that semantic modification relations are consistent with the structure predicted by VP-fronting, but not with the structure predicted by reciprocal binding. Intuitively, *visited them* is a semantic constituent, while *them on each other's birthdays* is not. We propose to capture this generalization by means of the claim that semantic interpretation is determined at the phase level, following Chomsky (2000, 2001). In (11), the complete *v*P phase containing *visit them* is interpreted as a semantic constituent. When the PP is added, this alters the syntactic structure of the *v*P, but not its semantic constituency, which is already

fixed. The PP is therefore interpreted as modifying the entire VP phase, not just the DP *them*. We propose, then, that event modifiers can attach low, but that they modify the phase completed before attachment. We assume that V moves to v, yielding the correct word order in (11).
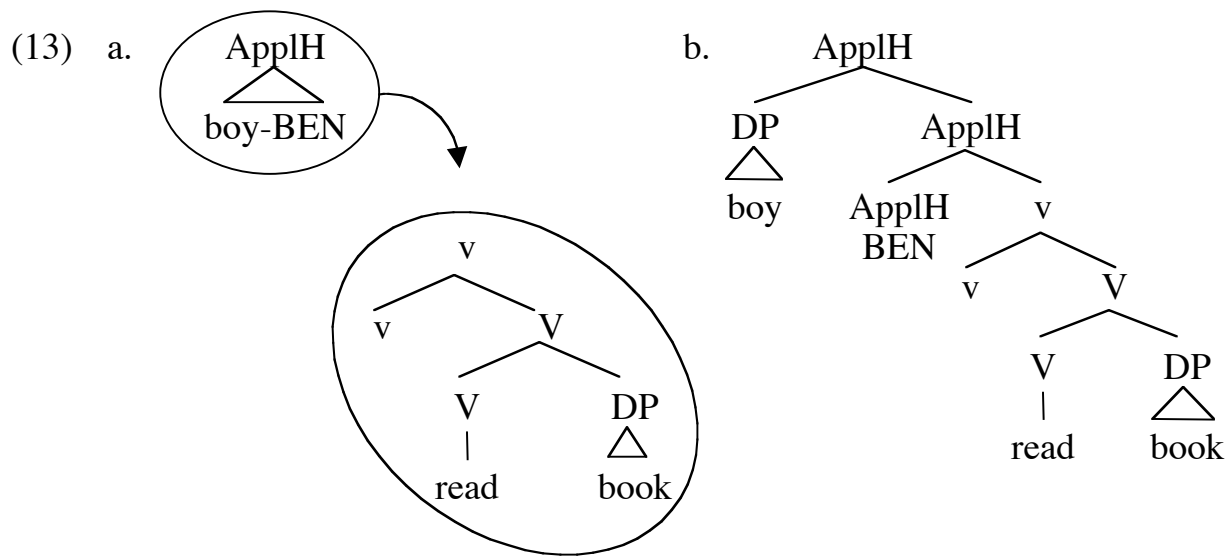
(11) a.

b.
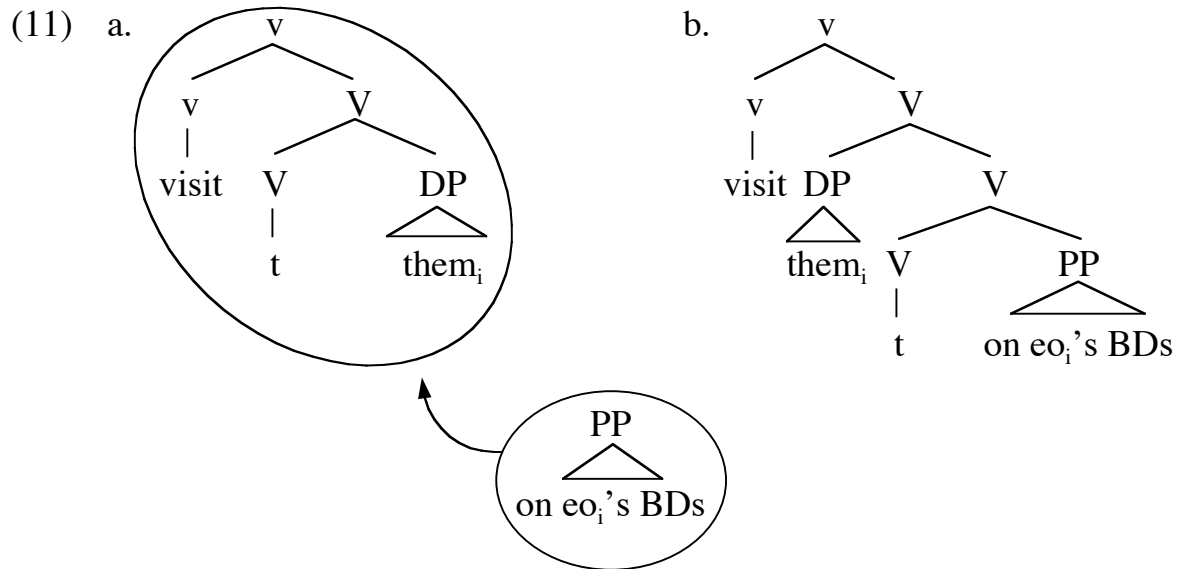
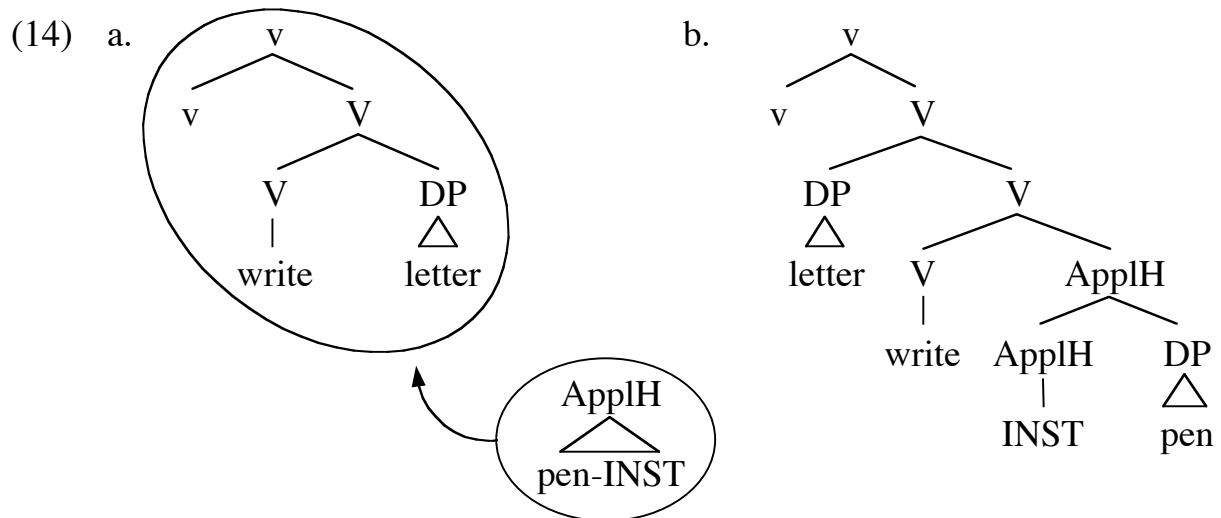## 4.   Phase-by-phase interpretation of applicatives

The same analysis can be given for Kinyarwanda applicatives. Recall that both Benefactive (12a) and Instrumental (12b) applicatives are semantically High, that is, event-modifying. We propose that both merge with a completed vP phase. However, word order and c-command properties indicate that they do not merge in the same positions.

(12) a.   Umukoôbwa a-ra-som-er-a   umuhuûngu   igitabo.
            girl   she-PR-read-BEN-ASP   boy   book
            'The girl is reading a book for the boy.'   *K:32*

      b.   Úmwáalímu a-ra-andik-iish-a   íbárúwa   íkárámu.
            teacher   he-PST-wrote-INST-ASP   letter   pen
            'The teacher is writing a letter with a pen.'   *K:107*

As shown in (13), the benefactive merges above the vP phase, like the external argument, which merges in the specifier of an active Voice projection (Pylkkänen 2002).

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(13) a. ApplH
       boy-BEN

    v
  v   V
     V   DP
     read   book

b. ApplH
  DP   ApplH
  boy   ApplH   v
       BEN
        v   V
        V   DP
        read book

By contrast, the Instrumental merges below the *v*P phase (14), like a cascade PP in English. Nevertheless, both applicatives modify the completed *v*P phase.

(14) a. v
  v   V
   V   DP
   write letter

ApplH
pen-INST

b. v
  v   V
   DP   V
   letter V   ApplH
       write ApplH   DP
          INST   pen

An important unresolved issue is what determines whether an applied DP will merge above or below the *v*P phase. Benefactive and external argument DPs merge above the phase, while Instrument DPs can merge below the phase. On the other hand, Benefactive and external argument PPs can merge below the phase. We leave this matter for further research.

5. Multiple applicatives

Unlike most Bantu languages, Kinyarwanda allows applicative morphology to stack. Data involving multiple applicatives give us additional evidence for our analysis of the difference attachment sites of Instrumental and Benefactive applicatives, since they have different properties when combined with Locative applicatives (Gerdts and Whaley 1991a, 1991b, 1993a, 1993b).

A Locative argument in Kinyarwanda can appear either as a PP, or (for some speakers) as a DP associated with an applicative morpheme on the verb. A Locative DP precedes a Theme argument, as in (15).

(15) Umuhuûngu á-r-íig-ir-á-ho   ishuûri imibáre.
      boy   he-PR-study-APPL-ASP-LOC   school   mathematics
      'The boy is studying mathematics at school.'   *K:92*

In a Locative applicative, only the Locative argument (16a), not the Theme (16b), has the properties of a direct object, such as passive movement to subject.[3]

(16) a. Ishuûri ry-oohere-j-w-é-ho   igitabo n'úúmwáalímu.
          school   it-send-ASP-PASS-ASP-LOC book   by-teacher
          'The school was sent the book by the teacher.'   *K:94*

      b. *Igitabo cy-oohere-j-w-é-ho   ishuûri n'úúmwáalímu.
          book   it-send-ASP-PASS-ASP-LOC school   by-teacher
          'The book was sent to the school by the teacher.'   *K:95*

In this respect, Locative applicatives contrast with Benefactive applicatives, which allow the Theme to retain its object properties. This is shown in (17), which includes a Dative argument, *imbwa*, as well as the Benefactive one, *umugabo*.

(17) Ibíryo bi-rá-hé-er-w-a   umugabo ímbwa n'ûmugóre.
      food   it-PR-give-BEN-PASS-ASP man   dog   by woman
      'The food was given to the dog for the man by the woman.'   *K:65*

We propose that this contrast between Locative and Benefactive applicatives follows from a phase-theoretic difference between them. McGinnis (2000, 2001, 2003) argues that in a phasal applicative (18a), either the applied argument or a lower argument can move to subject position. This is because the head of a phase has an optional EPP feature which allows a lower argument to move to the outer edge of the phase. On the other hand, in a non-phasal applicative (18b), the Minimal Link Condition generally ensures that only the higher, applied argument can move to the subject position of a passive.

(18) a. *Phasal Applicative*   b. *Non-Phasal Applicative*

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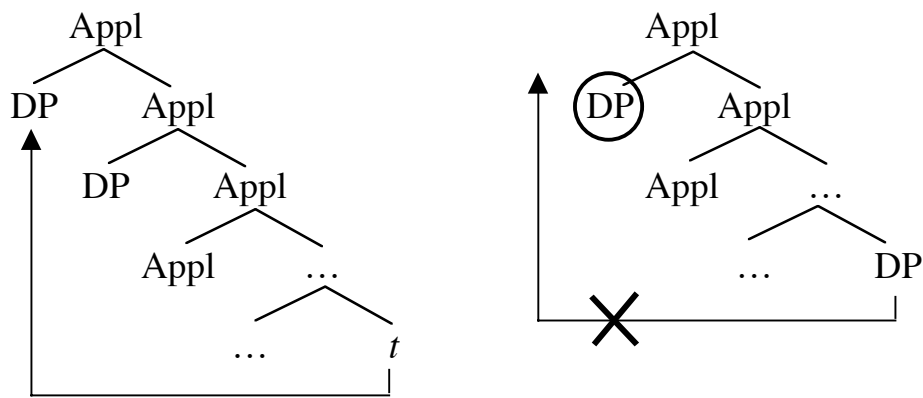
[3] Kimenyi (1980) also discusses other object properties: pronominalization, reflexivization, object-subject reversal, and extraction in relative clauses, clefts and Wh-questions.

Suppose, then, that Benefactive applicatives are phasal, while Locative applicatives are non-phasal. Under this view, a Benefactive applicative will allow lower arguments to raise to the subject position, while a Locative applicative will not.

McGinnis also proposes that the phasal/nonphasal distinction corresponds to High/Low distinction noted in Section 2. We have seen that Benefactive applicatives are semantically High, as predicted. On the other hand, it is not clear that Locative applicatives are semantically Low. A Locative applicative cannot combine with a transitive verb whose Theme is dropped (19a), though object drop is usually possible with transitive verbs. This initially appears to indicate that the Locative is incompatible with unergatives, hence a Low applicative. However, a Locative applicative can in fact combine with some intransitive verbs (19b).

(19) a. * Umuhuûngu   á-r-íig-ir-á-ho   ishuûri.
           boy   he-PR-study-APPL-ASP-LOC   school
           'The boy is studying at school.'   *K:91*

      b.   Ábáana   b-iica-yé-ho   ámééza.
            children they-sit-ASP-LOC   table
            'The children are sitting on the table.'   *K:92*

These observations suggest that the phasal/nonphasal distinction is not in fact tied to the High/Low distinction. This is an intriguing issue which we leave for further research.

As noted above, Kinyarwanda also allows multiple applicatives, including a combination of Instrumental and Locative applicatives. The Locative precedes both the Theme and the Instrumental argument, as expected:

(20) Úmwáalímu   y-a-andik-iish-ijé-ho   ikíbáho imibáre íngwa.
      teacher   he-PST-write-INST-ASP-LOC   board   math   chalk
      'The teacher wrote math on the blackboard with chalk.'   *K:107*

As above, the applied Locative retains its object properties (21a). Themes and applied Instrumental arguments usually also have object properties.[4] However, in a Locative applicative, a Theme loses its object properties (21b). The same is true for an Instrumental (21c).[5]
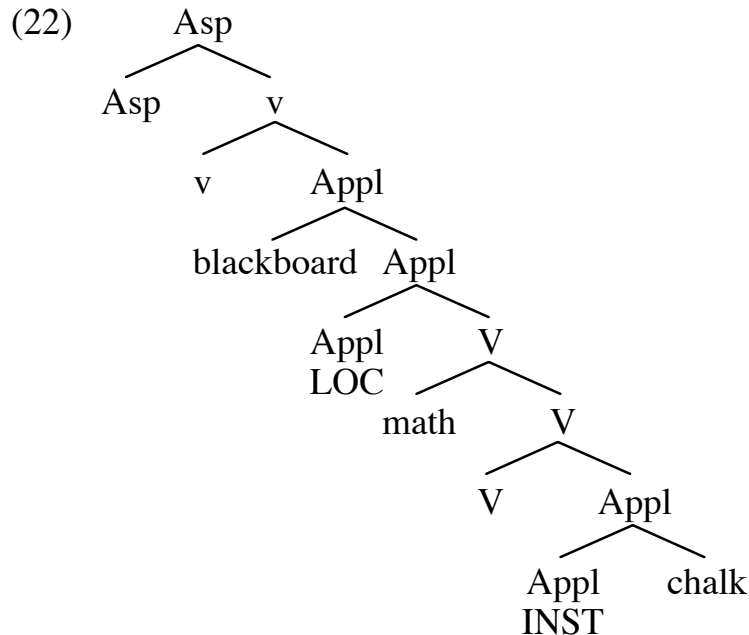
(21) a.   Ikíbáho   cy-a-andik-iish-ij-w-é-ho   imibáre íngwa.
            blackboard   it-PST-write-INST-ASP-PASS-ASP-LOC   math   chalk
            'On the blackboard was written math with chalk.'   *K:107*

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[4] Space considerations prevent us from providing a detailed analysis of this observation. We hypothesize that head-movement of the Instrumental applicative head to the main V renders the Instrument and the Theme "equidistant" for movement to a higher position (Baker 1988, Chomsky 1993, Marantz 1993). By contrast, the Locative is more clitic-like than other applicative heads: it follows the aspectual suffix, which other applicatives precede; alternatively, it can follow the locative DP itself. If head-movement of V to the Locative head is ruled out, then the Theme and the Locative cannot become equidistant.

[5] We have omitted the phrase *n'úúwáalímu* 'by the teacher' from these examples.

b. *Imibáre   y-a-andik-iish-ij-w-é-ho   ikíbáho   íngwa.
math   it-PST-write-INST-ASP-PASS-ASP-LOC   blackboard   chalk
'Math was written on the blackboard with chalk.'   *K:108*

c. *Íngwa   y-a-andik-iish-ij-w-é-ho   ikíbáho   imibáre.
chalk   it-PST-write-INST-ASP-PASS-ASP-LOC   blackboard   math
'Chalk was used to write math on the blackboard.'   *K:108*

Given the above analysis, this follows straightforwardly from the proposal that the Instrumental argument merges below the Theme (22). The non-phasal Locative applicative has no EPP feature to attract either the Instrument or the Theme. As a result, only the highest argument, the Locative, can move to the subject position.
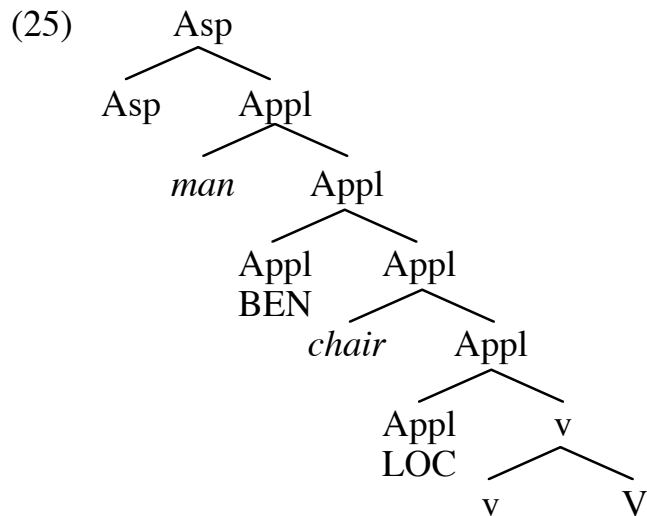
(22)   Asp
         ／＼
      Asp   v
            ／＼
         v   Appl
              ／＼
      blackboard Appl
                ／＼
           Appl   V
           LOC   ／＼
              math   V
                   ／＼
                 V   Appl
                      ／＼
                   Appl   chalk
                   INST

We turn next to the combination of Benefactive and Locative applicatives:

(23) Úmwáana   y-iicar-i-yé-ho   íntebe   umugabo.
child   he-sit-APPL-ASP-LOC chair   man
'The child is sitting on the chair for the man.'   *K:113*

Unlike an Instrumental, a Benefactive argument retains object properties when combined with a Locative applicative (24a). The Locative argument also retains its object properties (24b).

(24) a.   Umugabo y-iicar-i-w-é-ho   íntebe   n'úúmwáana.
man   he-sit-BEN-PASS-ASP-LOC chair   by-child
'For the man was sat on the chair by the child.'   *K:114*

b.   Íntebe   y-iicar-i-w-é-ho   umugabo   n'úúmwáana.
chair   it-sit-BEN-PASS-ASP-LOC man   by-child
'The chair was sat on for the man by the child.'   *K:114*

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This difference between Benefactive and Instrumental arguments in Locative applicatives follows from their respective sites of merger, as proposed in section 4 above. The Instrumental applicative merges below the *v*P phase, therefore below the non-phasal Locative applicative (22). On the other hand, the Benefactive merges above the *v*P phase, therefore above the Locative applicative (25). As a result, the Locative argument cannot block movement of the Benefactive argument. Since the Benefactive applicative is phasal, the Locative argument can also move to the subject of a passive. An optional EPP feature on the Benefactive applicative head can attract the Locative argument, which can then move again to the subject of the passive.

(25)

```
          Asp
         /    \
      Asp     Appl
             /    \
          man      Appl
                  /    \
              Appl      Appl
              BEN      /    \
                   chair    Appl
                           /    \
                       Appl      v
                       LOC      / \
                               v   V
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The proposed analysis correctly predicts the neutral word order in simple Benefactive, Locative, and Instrumental applicatives, as well as the different grammatical properties of applied Benefactive and Instrumental arguments when combined with a Locative applicative. It also predicts the neutral word order in Instrumental+Locative multiple applicatives. However, the word order in Benefactive+Locative multiple applicatives remains somewhat puzzling. If the Benefactive applicative merges above the Locative, as proposed here, the Benefactive argument should precede and c-command the Locative argument, yielding the word order V-BEN-LOC. In fact, the order is V-LOC-BEN, as shown in (23) above.

This issue deserves further consideration. We speculate that the order in (23) arises from stylistic movement to avoid ambiguity. The Benefactive applicative is homophonous with the alienable Possessive applicative. According to Kimenyi (1980:114), (23) has a benefactive interpretation only because the Locative precedes the other applied argument; if the order of the applied arguments is reversed, *umugabo* 'the man' is interpreted as a possessor.

6. Conclusion

We have proposed that event modifiers, such as applicative phrases, can modify a completed *v*P phase by merging either above or below it. In Kinyarwanda, Instrumentals merge below *v*P, while Benefactives merge above *v*P. The site of

merger has consequences for neutral word order and c-command relative to the Theme, as well as for the interaction with Locatives in multiple applicatives.

We have also adopted McGinnis's (2000, 2001, 2003) distinction between phasal and non-phasal applicative heads: a phasal applicative head may have an optional EPP feature that attracts a lower argument to the edge of the phase. The proposed analysis makes correct predictions about the object properties found in Locative and Benefactive applicatives, as well as in Instrumental+Locative and Benefactive+Locative multiple applicatives. However, we have also seen some evidence against McGinnis's proposal that the phasal/non-phasal distinction always corresponds to the High/Low distinction.

Most previous analyses of Instrumental and Benefactive applicatives provide no account of their contrasting behaviour in combination with Locatives (Perlmutter 1984, 1989; Baker 1988; Nakamura 1997). Since Benefactives and Instrumentals are both symmetrical applicatives, they are generally treated in the same way.[6] Marantz (1993) does distinguish Benefactives and Instrumentals, but this distinction is based on their event semantics. In Kinyarwanda, however, event-modifying Instrumentals behave unlike event-modifying Benefactives.

As will be evident to anyone familiar with the rich detail of Kimenyi (1980), the analysis proposed here is only the first step in developing a structural account of Kinyarwanda multiple applicatives. Many of Kimenyi's observations remain to be captured within a structural approach. Even restricting ourselves to the data discussed here, what determines the word order of Benefactive+Locative multiple applicatives remains elusive, as does the status of the connection between High/Low applicatives and phasal/non-phasal applicatives. Another unresolved issue is what determines whether an event-modifying argument will merge above or below the *v*P phase. These matters, among others, invite further research.

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[6] The Relational Grammar account of Gerdts and Whaley (1993b) is the exception. They posit a morphological rule for the Benefactive applicative and a syntactic rule involving clause union for the Instrumental applicative. This allows them to account for the multiple applicative facts. Space precludes a contrast of our analysis with theirs, but some empirical differences concerning the behaviour of indirect objects in multiple applicatives are predicted. We leave this to future research.

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