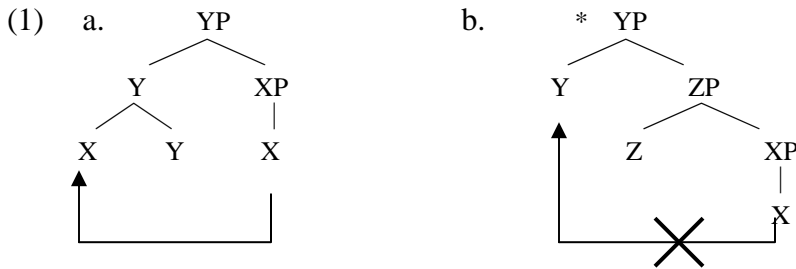


How to violate the HMC in Kitharaka

Jochen Zeller, University of KwaZulu-Natal
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1 Introduction

The standard analysis of head movement assumes that a head *X* moves to a head position *Y* by adjoining to *Y*, (1a).¹ The so-called Head Movement Constraint (Travis 1984) states that a head *X* must not skip an intervening head *Z* when moving to *Y*, (1b):



In section 2 of this short paper, I address data from the Bantu language Kitharaka which constitute violations of the HMC. I then show in section 3 that the theory developed in Matushansky (2006), which analyses head movement as consisting of a syntactic and a morphological step, is capable of handling these data. In section 4 I conclude that HMC-violations do not provide evidence against a head movement analysis of syntactic word formation processes in Bantu.

2 HMC violations in Kitharaka

Muriungi (2008) presents a detailed analysis of the morphosyntactic properties of the Bantu language Kitharaka (spoken in Kenya). Muriungi adopts the view that the various verbal affixes in Kitharaka head their own projections in the syntax. However, he provides evidence that the correct order of affixes cannot be derived by head movement without violating the HMC. Below I illustrate Muriungi's key argument with just one example; Muriungi (2008) discusses numerous other affixes that raise problems of a similar nature.

The example that I focus on here concerns the relation between a subset of the derivational suffixes which can attach to the verb in Kitharaka, namely the neuter

¹ I ignore alternative proposals, which distinguish head adjunction from other types of head movement, such as head substitution (i.e. movement into an existing, but "empty" head position) or "morphological" head movement triggered by affixal "sub-zero" heads (i.e. an affixal head Y^{-1} attracts *X* as its morphological host). See e.g. Rizzi & Roberts (1989), Roberts (1991, 1992) and van Riemsdijk (1998) for discussion.

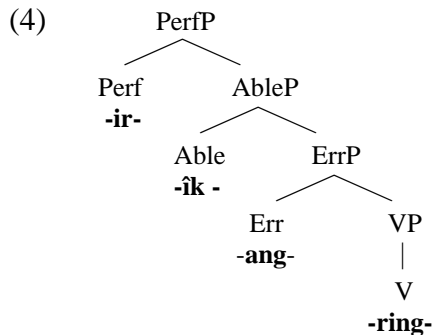
morpheme *-îk-* (glossed as ABLE by Muriungi), *-ang-* (glossed as ERR, for erratic) and *-ir-* (PERF; perfect tense):²

- (2) Mûûro n-û-ring-*îk-ang-ir-e*. [Kitharaka; Muriungi 2008: 6]
 river3 Foc-SM3-cross-ABLE-ERR-PERF-FV
 'The river was easy to cross irregularly.'

In order to determine the hierarchy of the syntactic projections that correspond to the verb and the three derivational affixes in (2), Muriungi investigates their scope relations. He notes (2008: 6) that the meaning of the sentence in (2) is adequately described by (3a), but not by (3b):

- (3) a. √ The river was easy to cross at 7a.m., 7.30 a.m., 7.45 a.m. – the river was not flooded, so I could always walk across. (ABLE > ERRATIC)
 b. * Only at 7 a.m, 7.30 a.m., 7.45 a.m. was the river easy to cross – other times, the temporary bridge was removed and one had to walk across the strong currents of the flooded river. (*ERRATIC > ABLE)

The interpretation of (2) implies therefore that the Able-suffix takes scope over the Erratic-suffix, not the other way around. Given that scope is typically represented via c-command, Muriungi concludes that the relative hierarchy of affixes in Kitharaka must be as shown in (4):³



The problem pointed out by Muriungi is that, on the basis of (4), successive-cyclic head movement would derive the wrong order of morphemes. If the verb moves and adjoins to Err, the verbal root *-ring-* forms a complex head with *-ang-* (*-ring-ang-*, assuming left-adjunction). This complex head would then move and adjoin to the neuter suffix *-ik-*, deriving a stem like **-ring-ang-ik-* or **-ik-ring-ang*. However, (2) shows that the affix *-ik-* intervenes between the erratic marker and the verb. In order for this affix order to be derived by head movement, the verb in (4) would have to move to Able in one step,

² The other morphemes attached to the verb in (2) are the focus marker (FOC), the subject agreement marker (SM), and the "final vowel" (FV), a suffix which in Bantu languages can be associated with a variety of grammatical functions, such as tense, aspect or polarity.

³ The representation in (4) is slightly simplified; it ignores other derivational morphemes discussed by Muriungi and only considers the suffixes present in example (2). See chapter 1 of Muriungi (2008) for more details.

across the Err-head. However, this derivation would violate HMC. Consequently, Muriungi (2008) interprets these (and other, similar) data from Kitharaka as evidence against a head movement approach to word formation in Bantu. His alternative proposal is based on a phrasal movement-analysis in the style of Cinque (2005) and therefore relies crucially on the idea that complex words are not represented as complex heads. Instead, in Muriungi's (2008) analysis, the affixal parts of a single word appear in many different head and specifier positions, and the complex word is spread across the whole clause (see Muriungi 2008 for details, and Julien 2002 for similar ideas).

However, in Zeller (2010), I discuss data from the Bantu language Shona (spoken in Zimbabwe) which show that this "clausal word"-idea has unwelcome consequences in constructions in which the morphologically complex verb moves as one constituent. In Shona object relatives clauses, the complex verb moves to a clause-initial position as a single word:

- (5) mbatya [dza-[va-ka-son-er-a]_i vakadzi t_i mwenga]
 clothes₁₀ REL₁₀-SM2-PAST-sew-APPL-FV woman₂ bride₁
 'the clothes which the women sewed for the bride'

[Shona; Demuth & Harford 1999: 42]

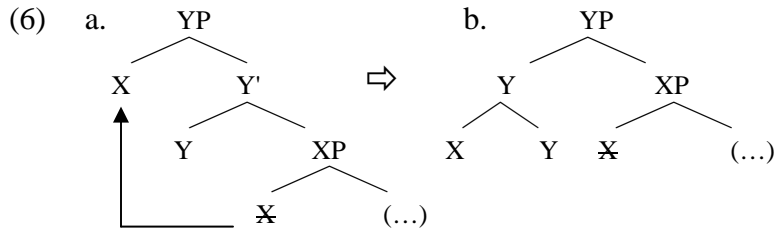
The standard word order in Shona is SVO. In (5), however, the verb *vakasonera*, which includes the inflectional past tense and subject agreement affixes as well as a derivational affix (the applicative marker), has moved in front of the subject to combine with the relative complementiser *dza-* (see Demuth & Harford 1999). The resulting word order is VSO. While an analysis which treats the verb in (5) as a complex head has no trouble explaining this word order in terms of head movement to C, a "clausal word"-approach such as Muriungi's cannot easily explain these cases of subject-verb inversion.

The problem is that, although the head movement approach works better for Shona, it does not seem to be able to explain the Kitharaka data. However, in the following section I show that, in contrast to the conclusion drawn by Muriungi, the Kitharaka verb in example (2) can be analysed as a complex verbal head which has been derived by head movement on the basis of the underlying representation in (4). The account I propose is based on the theory of head movement developed in Matushansky (2006).

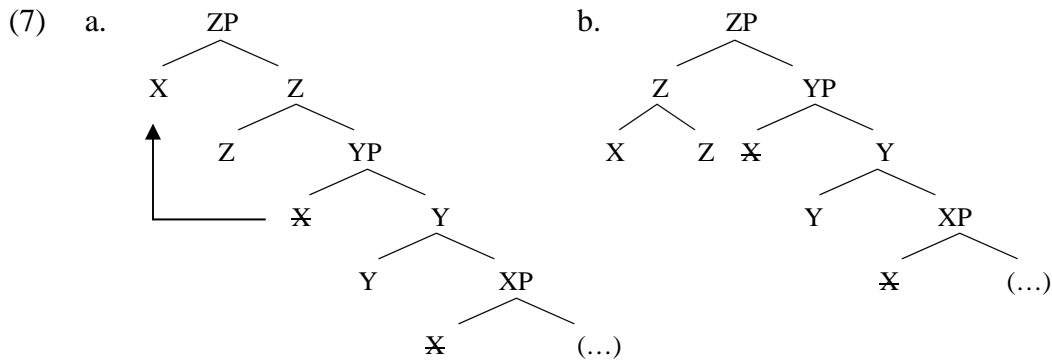
3 Head movement as phrasal movement and morphological merger

As was noted in the introduction, the standard view of head movement is that if a head X is attracted by another head Y, X moves and adjoins to Y in one step, forming a complex head which includes both X and Y. However, the view that head movement targets head positions is problematic from a minimalist point of view, because it violates the Extension Condition, which states that movement must always target the root of a syntactic object, and because the higher copy of the moved head does not c-command the lower copy. In order to solve this problem, Matushansky (2006) proposes a theory in which a head movement operation is regarded as consisting of two independent steps, one syntactic and one morphological. According to her theory, if X undergoes head movement to Y, it first moves to the *specifier* of the head Y. This movement step, shown in (6a) below, is in accordance with the Extension Condition, and X also c-commands its

lower copy. In Matushansky's analysis, the movement step in (6a) is triggered by c-selection: the attracting head Y is assumed to have an uninterpretable categorial feature [uX] corresponding to the category of the attracted head. This feature licenses both Merge of Y and XP and movement of X to [Spec, Y]. What makes head movement special is the second step, which according to Matushansky is a purely morphological operation called "m-merger". M-merger combines X and Y to form the familiar head adjunction structure in (6b):

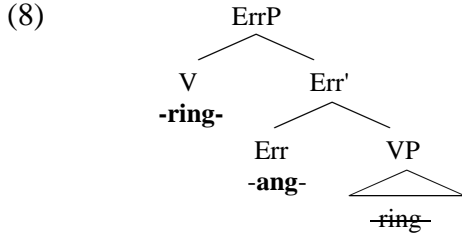


Importantly, as discussed by Matushansky (2006, sec. 5.1.3), the analysis in (6) is in principle capable of accommodating constructions in which the HMC is violated. In order to see why this is possible, suppose that YP in (6) is selected by a head Z and that the syntactic step in (6a) is *not* followed by m-merger in (6b). In this case, the head X in [Spec, Y] can undergo further movement to [Spec, Z], (7a), and subsequently m-merge with Z, (7b). The outcome is a configuration in which head movement of X to Z has skipped Y:



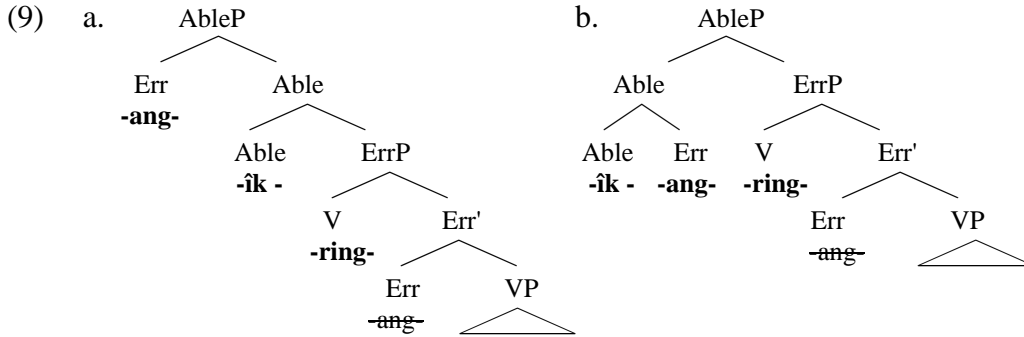
Since heads are allowed to move to specifiers, successive-cyclic movement of the head X in (7a) must be permitted. In fact, this type of movement could only be ruled out by the stipulation that m-merger must apply automatically as soon as a head has moved into a specifier position. Without such a stipulation, the derivation in (7a), and subsequent m-merger, is possible, giving rise to representations which violate the HMC.

The idea that heads, like phrases, move to the specifier positions of their attracting heads can now be used to explain the Kitharaka data. The derivation proceeds as follows. First, the erratic marker merges with the VP, in accordance with the hierarchy in (4). According to Matushansky, the initial step of head movement is syntactic movement of the head to the specifier of the attracting category. Since Err c-selects the VP, the verb can be attracted by Err's [uV]-feature and move to [Spec, Err]:

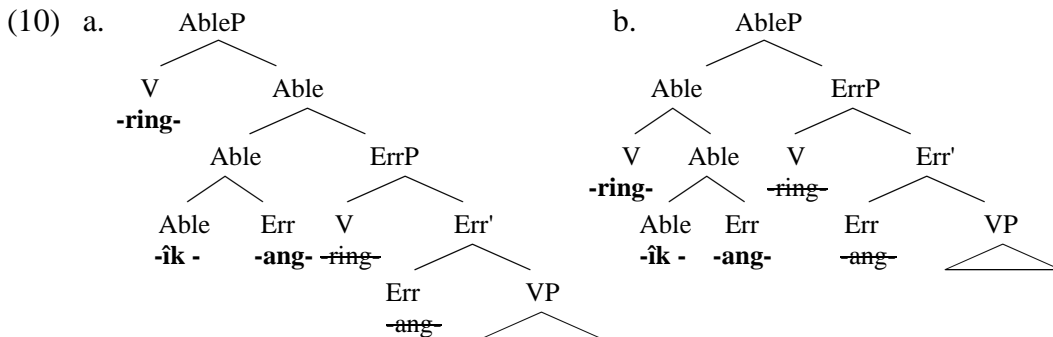


The next step of a head movement operation is usually m-merger, which, if applied to (8), would create a complex head with the morpheme order **-ring-ang-*. Importantly, however, nothing in the theory forces m-merger to follow syntactic movement in (8). M-merger creates complex heads which are required for morphological reasons; but if morphology does not require (or indeed, not permit) two affixes to be merged as complex heads, then this means that m-merger may simply not apply. Consequently, although syntactic c-selection has forced V to move to [Spec, Err] in (8), the verb may remain in this position when the next head is merged.

As shown in (4), this head is the neuter affix, Able. Since Able c-selects ErrP, it can also trigger head movement of Err. This means that Err first moves to [Spec, Able], (9a); m-merger then creates the complex Able-head which incorporates Err, (9b):



In (9b), the verb is still in the specifier of the Err-head. Importantly, from this position, it can now undergo further movement to [Spec, Able]. In order for this to happen, all we need to assume is that Able has an [uV]-feature, which attracts the closest verbal category. First, the verb moves to [Spec, Able], (10a), and then m-merger can apply and create a complex Able-head, (10b). This head includes the verb, the erratic and the neuter affix in the right order:



The complex Able-head in (10b) looks as if it had been derived anti-cyclically, because the verb has merged with Able *after* the erratic marker has moved and adjoined to Able as a suffix. However, what makes this derivation legitimate is the fact that the verb is actually in [Spec, Err] when the Err-head moves to Able (see (9)). Since nothing prevents movement of a head across its own specifier, (9) is unproblematic. (10b) is also derived without excorporation (no complex head was "destroyed" by moving out one of its parts). However, (10b) violates the HMC: the verb has skipped the Err-head when moving to Able. But Matushansky's theory predicts such violations, at least if heads are allowed to move cyclically from specifier to specifier before they incorporate as heads via m-merger (cf. the discussion of long head movement in Matushansky 2006, sec. 5.1.3). Therefore, if Matushansky's (2006) theory is adopted, the derivation outlined in (8)-(10) is an entirely legitimate way of deriving a complex head corresponding to the verb stem *-ring-ik-ang-* on the basis of the syntax in (4).

The analysis shown in (8)-(10) implies that the possibility of a derivation which violates the HMC is the result of lexical properties associated with the elements involved in the derivation. Since head movement is triggered by c-selection, the mismatch between the syntactic hierarchy in (4) and the morpheme order in (2) must be due to a selectional property of the Able-head: it c-selects *two* syntactic categories, namely Err (which determines syntactic merger of Able and ErrP and head movement of Err) and the verb (which determines head movement of V from [Spec, Err]). In order to avoid overgeneration, one may want to regard multiple c-selection and the corresponding HMC-violations as exceptional. Interestingly, however, the assumption that a syntactic head which corresponds to an affix can c-select more than one category may be independently needed. Given that the use of any particular derivational affix is optional, there cannot be a fixed hierarchy of syntactic projections representing these affixes. The syntax corresponding to morphologically complex verbs in Bantu sometimes includes and sometimes omits certain categories. For example, in constructions in which the Kitharaka verb comes with a neuter suffix, but *without* an erratic marker, Able must be allowed to merge with VP directly, which means that Able must also c-select V. The derivation in (8)-(10) can then be regarded as a way of satisfying both c-selectional properties of the Able-head (i.e. checking its [uErr]- and its [uV]-feature) within the same derivation.

4 Conclusion

The theory proposed in Matushansky (2006) implements the crucial insight that head movement is a syntax-morphology interface operation: *syntactic* movement (head-to-specifier) feeds a *morphological* word formation process (m-merger). The fact that this theory can also derive data which have been interpreted as a challenge for traditional head movement accounts not only provides evidence for Matushansky's approach, but also supports the idea that syntactic word formation in Bantu be analysed in terms of head movement. In light of the empirical advantages of head movement analyses discussed in section 2 (and in more detail in Zeller 2010), I consider this a welcome conclusion.

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