MORE ON UNDERMERGE:
PHRASAL AND HEAD MOVEMENT INTERACTIONS IN KIKUYU*

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1 Introduction

Pesetsky (2007, 2013) argues that phrasal movement can target two different kinds of positions relative to a probing head $H^0$. While it is accepted that phrasal movement results in the formation of a specifier of $H^0$, Pesetsky proposes that Undermerge—phrasal movement forming a complement of $H^0$—is also attested. The distinction is illustrated in (1):

(1) a. Overmerge:

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   HP
  / \  \\
 /   \ \\
α    H^0 TP
   \   / \  \\
    \ /   \\
     \ ...<α>...
```

b. Undermerge:

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   HP
  / \  \\
 /   \ \\
H^0 α  TP
   \   / \\
    \ /  \\
     \ ...<α>...
```

Pesetsky argues that Undermerge is attested cross-linguistically. For instance, he cites McCloskey (1984), who identifies a series of constructions in Modern Irish in which a subject originating within an embedded non-finite clause appears to raise to the object of $P^0$ within a higher clause. As shown below, the object of the preposition exhibits various hallmarks of A-raising; it may alternate with an expletive (2a) and be interpreted as part of a larger idiom chunk with the material in the embedded clause (2b).  

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1. **Abbreviations:** AA = anti-agreement; AGR = agreement; APPL = applicative; COMP = complementizer; COND = conditional; COP = copula; FOC = focus marker; FUT = future; FV = final vowel; HAB = habitual aspect; NEG1 =
In this short paper, I argue that Kikuyu (Bantu; Kenya) also exhibits Undermerge, and therefore constitutes novel evidence for Undermerge itself. Specifically, Kikuyu Á-movement always results in the formation of a complement to the movement-triggering head in the left periphery. I also develop an accompanying, though not fully explored, idea from Pesetsky (2007, 2013) that head movement may also be reduced to Undermerge (as Undermerge always creates a constituent containing the attractor and the mover). The difference between phrasal Undermerge and head movement thus simply boils down to the type of complement-forming element. The idea that head movement is also Undermerge comes from a curious interaction between phrasal movement and head movement in the Kikuyu left periphery. Specifically, we find that phrasal Á-movement to a movement-triggering head blocks head movement to that same head; conversely, when head movement takes place instead, phrasal movement is impossible. We may make sense of this pattern under an Undermerge account, assuming that a given head may only host one complement.

2 The Kikuyu Left Periphery

Our starting point is the prefix nĩ. In declarative constructions this prefix surfaces optionally on the verb, and, when present, contributes semantics pertaining to verum focus (Schwarz, 2003, 2007, Nurse, 2008). In yes/no questions, nĩ is obligatory.

(3) a. mũndũ nĩ-a-kũ-gũ-a ngari
    man   FOC-1SM-FUT-buy-FV car
    ‘The man will buy a car.’

b. Mwangi nĩ-a-ra-rug-ag-a?
    Mwangi FOC-1SM-PROG-cook-HAB-FV
    ‘Does Mwangi cook?’

In wh-questions (and with other types of Á-dependencies), however, a different pattern obtains. Kikuyu exhibits both full movement to the matrix left periphery and partial movement to the edge of an embedded clause (Bergvall, 1987, Mugane, 1997, Fanselow, 2006, Schwarz, 2003, 2007, Schraild, 2014); as shown below, nĩ must surface to the left of the extracted wh-phrase, rather than on the verb; moreover, it is obligatorily present.²

²The same facts hold for focus fronting, omitted here for space.

negation 1; NEG2 = negation 2; NOM = nominative; PL = plural; PROG = progressive aspect; PST = past tense; REL = relativizer; SM = subject marker; 1 = class 1; 2 = class 2; 9 = class 9
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(4) a. n̓í k̓ī Kamau a-r-ecir-ia [ atī Mwangi a-ra-thom-ir-e ___ ]
    FOC what Kamau 1SM-PROG-think-FV that Mwangi 1SM-PROG-read-PST-FV
    ‘What does Kamau think Mwangi read?’

    b. Kamau a-r-ecir-ia [ atī n̓í k̓ī Mwangi a-ra-thom-ir-e ___ ]
    Kamau 1SM-PROG-think-FV that FOC what Mwangi 1SM-PROG-read-PST-FV
    ‘What does Kamau think Mwangi read?’

In addition to full and partial wh-movement, Kikuyu permits wh-in situ (5). Unlike what we have seen so far, however, n̓í cannot surface at all in wh-in situ constructions.

(5) ngu (*n̓í)-i-kū-rūm-a (*n̓)-ūū
dog (*FOC-)9SM-FUT-bite-FV (*FOC-)who
    ‘Who will the dog bite?’

It has been argued that wh-movement in Kikuyu is actually derived by clefting (Bergvall, 1987), on the basis that the Kikuyu copula appears to surface as n̓í. However, I follow Schwarz (2003, 2007) and Schardl (2014) in taking Kikuyu wh-questions to be formed via bona fide focus-driven Æ-movement, and n̓í to be a generalized focus marker preceding a null copula in copular constructions. This is corroborated by (6), in which we see that extraction within a copular construction results in the obligatory association of n̓í with the wh-phrase.

(6) a. Mwangi n̓í mū-ruaru
    Mwangi FOC 1AGR-sick
    ‘Mwangi is sick.’

    b. n̓-ūū mū-ruaru
    FOC-who 1AGR-sick
    ‘Who is sick?’

I assume that wh-movement in Kikuyu is Agree-driven Internal Merge (e.g. Chomsky, 2000). Evidence for this treatment comes from superiority facts, which can in turn be reduced to typical conditions on locality. As shown below, Kikuyu is strictly superiority-obeying, meaning that in multiple wh-questions only the higher wh-word is able to move to the left periphery (the lower wh-word remains in situ).

(7) Subject > VP-level adjunct

a. n̓-ūū ū-rug-ir-e thamakí rí
    FOC-who AA.SM-cook-PST-FV fish when
    ‘Who cooked fish when?’

b. *[n̓í rí ] [ ūū ] a-rug-ir-e thamakí
    FOC when who 1SM-cook-PST-FV fish
    Intended: ‘When did who cook fish?’

(8) VP-level adjunct > object

a. n̓í rí Mwangi a-rug-ir-e kī
    FOC when Mwangi 1SM-cook-PST-FV what
    ‘When will Mwangi cook what?’

b. *n̓í kī Mwangi a-rug-ir-e rí
    FOC what Mwangi 1SM-cook-PST-FV when
    Intended: ‘What will Mwangi cook when?’
This also allows us to make sense of why \( n'i \) cannot co-occur in a wh-in situ construction (repeated below). Assuming that the movement-triggering EPP feature is obligatory, constructions like in (9) are ruled out simply because the wh-word must undergo movement.

(9) ngui (*\( n'i \)-i-kū-rūm-a ūū
  dog *FOC-)9SM-FUT-bite-FV who
  ‘Who will the dog bite?’

As I showed earlier in the partial doubling construction in (4b), the left-peripheral wh-word follows the complementizer. This suggests that the CP domain is articulated, consisting of a number of subprojections (Rizzi, 1997). For concreteness, I take the post-complementizer projection hosting the wh-word to be FocP, and assume the following basic structure for the Kikuyu the left periphery:

(10) a. atī nī-a-kū-rūg-a
    that FOC-1SM-FUT-cook-FV
    ‘...that he will cook.’

In the structure above, the complementizer atī ‘that’ occupies Force\(^0\), while nī is base-generated in Foc\(^0\). The latter assumption roughly follows Schwarz (2003, 2007) and Abels and Muriungi (2008). However, I diverge from previous work in my treatment of the interaction between wh-movement and the distribution of \( n'i \). One of the central questions in the next section will thus concern why \( n'i \) in Foc\(^0\) fails to attach to the verb when a wh-word has moved to FocP.

3 Kikuyu Wh-movement Undermerges

As shown earlier, in clauses without wh-movement (including both declarative clauses and yes-no interrogative clauses), the focus prefix \( n'i \) (when present) attaches to the verbal complex (11a); however, in wh-questions, the same prefix must attach instead to the moved wh-phrase (11b).

(11) a. mūndū nī-a-thi-ir-e
    man FOC-1SM-leave-PST-FV
    ‘The man left.’

To account for this pattern, Clements (1984) and Bergvall (1987) posit that \( n'i \) is base-generated high but lowers onto the verb in the absence of a wh-phrase. Conversely, Schwarz (2003, 2007) suggests that either a focused DP (as in (11b)) or a focused verbal complex (as in (11a)) can move to Spec-FocP, thus joining with \( n'i \). In both types of analyses, that \( n'i \) happens to be a prefix is determined by other means.

\[\text{\( n'i \)}\]
I argue instead that we may capture the same facts by taking wh-movement to be *Undermerge to Foc°*. The idea is that a probe on Foc° searches for a suitable goal in its c-command domain—in this case, a focus-bearing XP—and draws it to its *complement* position rather than its specifier position. Below, I present two morphological arguments for this claim.

First, Undermerge accounts for *nĩ*’s prefixal status; the landing site of the moved wh-phrase, the complement of Foc°, is linearly to the right of *nĩ* in Foc°. Recall that Undermerge feeds the formation of syntactic constituency between the probe and the mover, and that this feeds affixation (this was shown earlier with the Modern Irish data). Let us moreover assume, with Bobaljik (1994), Embick and Noyer (2001), Harley (2013) and others, that adjacency between two terminal nodes (heads) is a prerequisite for their affixation. Thus, we may conclude that affixation between *nĩ* and the rest of the verbal complex in Kikuyu is blocked because *nĩ* in Foc° and the immediately lower head (Agr° as illustrated in (10)) are no longer adjacent—the Undermerged wh-phrase intervenes by forming a constituent with Foc° to the exclusion of the rest of the clause.

However, in the absence of a left-peripheral Undermerged wh-phrase, word formation between the material in Foc° and other heads may take place, because the head-head adjacency relation is preserved. The overall idea is summarized in (12). Note that I take only *phrasal complements*, and not *phrasal specifiers*, to interfere with word formation (contra e.g. Bobaljik 1994); I leave the implications of this distinction for further research.

(12) **Phrasal Undermerge blocks Merger:**

The second argument is that, as shown throughout this paper, the phrasal constituent targeted by Foc° always surfaces to the right of *nĩ*. Moreover, as (13) shows, the post-*nĩ* constituent can be of any structural complexity. In the examples given, we see that the moved constituent may contain a CP and coordinated DPs.

(13) a. *nĩ* [DP *mündũ* [CP *ū-riña* *Mwangi a-ra-rug-ĩ-ir-e* irio]]
   FOC man 1AGR-REL Mwangi 1SM-PROG-cook-APPL-PST-FV food]
   *ū-gür-ir-e* ngari
   AA.SM-buy-PST-FV car
   'It’s the man that Mwangi cooked for that bought the car.'
   b. *nĩ* *mündũ* *ū-rĩkũ* *na ngui i-rikũ* ma-ra-thak-a hamwe
   FOC man 1AGR-which and dog 9AGR-which 2SM-PROG-play-FV together
   'Which man and which dog are playing together?'

This presents a challenge for an alternative treatment that might make use of postsyntactic morpheme reordering. Such an alternative might posit that the extracted constituent moves to Spec-
FocP, producing a $XP$-$n\ddagger$ morpheme order, but a morphological operation applies postsyntactically to yield the correct morpheme order. For instance, Local Dislocation (Embick and Noyer, 2001) swaps the adjacency relationship between two elements for one of affixation.

A problem with this approach, however, is that Local Dislocation is typically very local, and targets morphologically simplex elements such as heads or minimal words. Apparent exceptions to this are due to successive applications of Local Dislocation. For example, the second-position clitic que ‘and’ in Latin normally encliticizes to the first minimal word in its complement (14a), but it may also skip over the first minimal word if this word is a monosyllabic $P^0$ (14b); Embick and Noyer suggest that this is allowed because the preposition and its nominal complement first undergo string-vacuous Local Dislocation themselves. Thus, even in this example, Local Dislocation continues to operate on minimal words (15).

(14) *Latin:*

a. bon-$\ddagger$ puer-$\ddagger$ bon-ae-\textbf{que} puell-ae
   \hspace{1cm} good-NOM.PL boy-NOM.PL good-NOM.PL-\textbf{and} girl-NOM.PL
   \hspace{1cm} ‘good boys and good girls’

b. in r\textit{e}bus-\textbf{que} in things-\textbf{and}  \hspace{1cm} ‘and in things’

(15) \textit{Two applications of Local Dislocation:}

a. que- * [ in * r\textit{e}+bus ] $\rightarrow$ que- * [ in+r\textit{e}+bus ]

b. que- * [ in+r\textit{e}+bus ] $\rightarrow$ [ in+r\textit{e}+bus+que ] \hspace{1cm} (Embick and Noyer, 2001)

In a Local Dislocation-based treatment of Kikuyu, we must posit that the operation applies between a head and the maximal projection in the specifier of this head, and, moreover, that all of the elements within the maximal projection have undergone Local Dislocation themselves and are therefore interpreted as a single minimal word. However, there is no evidence for this. Furthermore, a morpheme reordering operation such as Local Dislocation says nothing about when $n\ddagger$ is expected to affix to the wh-phrase or to the verbal complex, and therefore cannot be invoked to capture the distribution of $n\ddagger$—the puzzle that we are hoping to capture in the first place. Conversely, an Undermerge analysis can straightforwardly capture the correct morpheme order without recourse to additional morphological operations; it comes for free simply by moving the phrase to a position under the head.

A question that remains unaddressed is why the moving element targets the complement of Foc$^0$ rather than its specifier. I suggest that this is because $n\ddagger$ is a focus sensitive operator (cf. Abels and Muriungi, 2008) that takes its sister as its semantic argument; Undermerge to the complement of Foc$^0$ creates this sisterhood configuration. I leave the implications of this semantics-fed movement for future work (though see Wagner 2006 for a similar proposal).

4 Head movement as Head-Head Undermerge

Earlier, I suggested that phrasal Undermerge to the complement of Foc$^0$ may disrupt word formation processes involving this head. In this section, I propose that phrasal Undermerge blocks head movement to the same head, suggesting that head movement should also be understood as
a variety of Undermerge. Evidence for this comes from the behaviour of negation. Kikuyu, like many other Bantu languages, has multiple negation morphemes (Nurse, 2008); in Kikuyu, they are \textit{nd}, \textit{ti}, and \textit{ta}. The first two, \textit{nd} and \textit{ti}, are phonologically-conditioned allomorphs\footnote{Whether negation surfaces as \textit{nd} or \textit{ti} depends on whether the agreement morpheme adjacent is vowel- or consonant-initial.}; I will refer to this type of negation as \textsc{neg}1. \textsc{neg}1 is used in full declarative clauses and yes/no questions, as shown in (16). Also, note that the presence of \textsc{neg}1 is in complementary distribution with preverbal \textit{nt}.

(16) a. mwana \textbf{nd-a-gū-thom-a} ibuku
   \begin{tabular}{r}
   \textit{NEG}1-\textit{SM-FUT-read-FV} book
   \end{tabular}
   \begin{tabular}{l}
   ‘The child will not read the book.’
   \end{tabular}

   b. Mwangi a-r-ecir-ia [ Njeri \textbf{nd-a-ra-rug-a} thamaki ]
   Mwangi 1SM-\textit{PROG-think-FV} Njeri \textbf{NEG1-1SM-PROG-cook-FV} fish
   \begin{tabular}{l}
   ‘Mwangi thinks that Njeri isn’t cooking the fish.’
   \end{tabular}

   c. Mwangi \textbf{nd-a-rug-ag-a}?
   Mwangi \textbf{NEG1-1SM-cook-HAB-FV}
   \begin{tabular}{l}
   ‘Doesn’t Mwangi cook?’
   \end{tabular}

The choice between \textsc{neg}1 and the third negation morpheme, \textit{ta} (\textsc{neg}2) is \textit{controlled by the syntax}. For example, in reduced clauses that do not allow \textit{nt} or partial movement (i.e., that lack the \textsc{CP} layer altogether), \textsc{neg}2 must be used (\textsc{neg}1 is not possible in such clauses).

(17) a. Mwangi a-haan-a ta [ (*\textit{nī}-)a-ra-rug-a ]
   Mwangi 1SM-\textit{seem-FV} like (\textit{FOC-})1SM-\textit{PROG-cook-FV}
   \begin{tabular}{l}
   ‘Mwangi seems to be cooking.’
   \end{tabular}

   b. \textit{(nī kīī)} Mwangi a-haan-a ta [ (*\textit{nī kīī}) a-ra-rug-a (kīī) ]
   (\textit{FOC what}) Mwangi 1SM-\textit{seem-FV} like (\textit{FOC what} 1SM-\textit{PROG-cook-FV} (\textit{what})
   \begin{tabular}{l}
   ‘What does Mwangi seem to be cooking?’
   \end{tabular}

   c. Mwangi a-haan-a ta [ a-ta-ra-rug-a ]
   Mwangi 1SM-\textit{seem-FV} like 1SM-\textbf{NEG2-PROG-cook-FV}
   \begin{tabular}{l}
   ‘Mwangi seems to not be cooking.’
   \end{tabular}

That \textsc{neg}2 surfaces in reduced clauses suggests that \textsc{neg}2 is lower than Foc\textsuperscript{0}—I will refer to this position as Neg\textsuperscript{0}. An additional argument that \textsc{neg}2 occupies a position lower than Foc\textsuperscript{0} comes from the fact that \textsc{neg}2 and \textit{nt} are able to co-occur in certain environments. In non-reduced matrix clauses, for example, \textsc{neg}2 is used in wh-questions:

(18) \textit{nī kīī} mwana \textbf{a-ta-na-rug-a}
   \begin{tabular}{c}
   \textit{FOC what child 1SM-\textbf{NEG2-PST-cook-FV}}
   \end{tabular}
   \begin{tabular}{l}
   ‘What didn’t the child cook?’
   \end{tabular}
heterogeneous, I argue that they follow straightforwardly from the current proposal. I propose that \textsc{neg}1 and \textsc{neg}2 occupy different syntactic positions. While \textsc{neg}2 is in \textsc{neg}0, \textsc{neg}1 is in \textsc{foc}0, which explains why \textsc{neg}1 and \textsc{ni} may not co-occur. Now, consider the contrast in (19). Although it was shown above that \textsc{neg}2 is used in wh-questions, this is not the complete picture. \textsc{neg}2 is used in wh-questions \textit{with overt movement}; if the wh-word remains in situ, \textsc{neg}1 must be used instead.

(19) a. nī kīī mwana a-\textsc{ta}-na-rug-a
   \textsc{foc} what child 1\textsc{sm-neg}2-pst-cook-\textsc{fsv}
   ‘What didn’t the child cook?’

   b. mwana nd-a-na-rug-a kīī
   child \textsc{neg}1-1\textsc{sm-pst-cook-\textsc{fsv}} what
   ‘What didn’t the child cook?’

To account for this contrast, plus the other properties of \textsc{neg}1 and \textsc{neg}2 discussed above, I propose that negation is \textit{always base-generated in \textsc{neg}0} but undergoes head movement to \textsc{foc}0 whenever it can. Whether negation is spelled out as \textsc{neg}1 (\textsc{nd/\textsc{ti}}) or \textsc{neg}2 (\textsc{ta}) is controlled by its syntactic position at the point of spell-out.\footnote{Why this head movement from \textsc{neg}0 to \textsc{foc}0 takes place at all remains an open question for future work.} In typical declarative clauses, negation undergoes head movement to \textsc{foc}0, so negation is spelled out as \textsc{neg}1. In reduced clauses, head movement to \textsc{foc}0 is not possible, so negation remains in its base position in \textsc{neg}0 and is realized as \textsc{neg}2. This is schematized below.

(20) a. \textit{Full declarative clause; head-head}
   \textit{Undermerge possible:}

   \begin{itemize}
   \item ForceP
   \item Force\textsuperscript{0}
   \item COMP
   \item FocP
   \item Foc\textsuperscript{0}
   \item NegP
   \item Neg\textsuperscript{0}
   \item \textsc{neg}1
   \item AgrP
   \item \ldots
   \end{itemize}

b. \textit{Reduced declarative clause; head-head Undermerge impossible:}

   \begin{itemize}
   \item NegP
   \item Neg\textsuperscript{0}
   \item \textsc{neg}2
   \item AgrP
   \item \ldots
   \end{itemize}

In wh-questions, however, we have a single head, Foc\textsuperscript{0}, able to trigger both phrasal Undermerge and head movement. I propose that this is the basis of the contrast in (19): Foc\textsuperscript{0} can only take one complement, but the probe on Foc\textsuperscript{0} is able to target either a focus-bearing phrase or a Neg\textsuperscript{0}. When a phrase is targeted, this phrase Undermerges to Foc\textsuperscript{0}, blocking head movement, so negation is realized as \textsc{ta} in is base-position. Conversely, when Neg\textsuperscript{0} is targeted, this head undergoes Undermerge and is spelled out as nd/\textsc{ti}; head movement blocks phrasal Undermerge so the wh-word remains in situ. This is illustrated below.
Finally, this proposal is supported by the interaction between negation and wh-in situ in reduced clauses. As shown in (22), in such clauses, NEG2 and wh-in situ may co-exist. This is because there is no FocP in reduced clauses, so neither phrasal movement nor head movement are possible.

(22) Mwangi a-haan-a ta [ a-ta-ra-rug-a kĩĩ ]
Mwangi 1SM-seem-FV like 1SM-NEG2-PROG-cook-FV what
‘What does Mwangi seem to not be cooking?’

In sum, I have identified two distinct ways in which phrasal Undermerge of a wh-phrase to the complement of Foc⁰ may affect head-head processes in Kikuyu. Here, the disruption of head movement is reflected in the surface realization of negation. I additionally showed that the converse is also possible—head movement may block phrasal Undermerge.

5 Conclusion

This paper proposed that Kikuyu wh-phrases Undermerge, forming a complement of its triggering head, Foc⁰. While the initial motivation for this claim comes from the observation that wh-phrases invariably follow the focus morpheme nĩ, the Undermerge approach is supported by the fact that wh-movement interacts with various head-head processes targeting the same head, Foc⁰. I showed that the presence of an Undermerged wh-phrase in the left periphery prevents nĩ from affixing to the verbal complex, and also proposed that Undermerging a phrase disrupts the head-head adjacency relationship necessary for affixation. I moreover illustrated how the analysis could also be extended to head movement, such that head movement is also analyzed as Undermerge: (otherwise obligatory) head movement of negation is blocked by phrasal Undermerge, and phrasal movement is similarly blocked by head-head Undermerge. This paper thus provides novel evidence in favour of the existence of Undermerge, as well as a more specific level of interaction between Undermerged phrases and heads.

I conclude with an open question and a possible direction. According to the proposal detailed here, both phrases and heads are able to be targeted for movement. This is unexpected under principles such as Attract Closest (Chomsky, 1995), given the local nature of head movement. It also contradicts certain views of head movement, e.g., Matushansky (2006), which reduce head
movement to phrasal movement to specifier. One possibility, which I leave for future work, is that all kinds of movement are feature-driven, and that the different types of features driving phrasal movement and head movement are hierarchically organized.

References


Pesetsky, David. 2007. Undermerge...and the secret genitive inside every Russian noun. *Presented at FASL16*.


