



Phrasal movement inside Bantu verbs

Deriving affix scope and order in Kĩĩtharaka

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0.2 Abbreviations

ABL	able
ADJ	adjective
AN	reciprocal/someone
APL	applicative
ASS	associative marker
C	current/today past
IC	inner causative
CRC	coerce causative
ERR	erratic
F	focus marker
FT	future
FV	final vowel
1 st	first person
HAB	habitual
LC	locative
NEG	negation
OM	object marker
PA	plural addressee
PAS	passive
PST	past
PFC	perfect
PFV	perfective
PS	person
PL	plural
PREF	prefix
R	remote
REFL	reflexive
REV	reversive
2 nd	second person
SA	subject agreement
SBJ	subject
SG	singular
T	general today tense
TR	transitive
VR	root vowel
Y	yesterday past

Chapter 1

The big picture: phrasal movement in morphology

1.1 A fixed order of suffixes

Consider the following suffixes in Kîtharaka (SVO; Bantu, E54; Kenyan): **COERCE**, a causative morpheme expressing coercive causation, **ABLE**, a morpheme that triggers passivization and expresses a middle-like “easy” reading, **ERRATIC** an affix that conveys an event occurs at irregular intervals, **HABITUAL** a suffix that conveys a situation occurs/holds over an extended period of time, and **PERFECT**, a morpheme conveying that an eventuality that started in the past extends/ is relevant to the present.

These morphemes come in the fixed order in (1) (\prec =precedes).¹

(1) root \prec COERCE \prec ABLE \prec ERRATIC \prec HABITUAL \prec PERFECT

The ordering of the suffixes in (1) raises at least three issues (i) how the suffixes relate to one another (ii) why the suffixes come in the fixed order they do (iii) how the relations between the suffixes and the fixed order they come in are mediated.

Morphemes carry meaning and therefore they relate with other morphemes in terms of scope. Syntax has a technology that expresses scopes - asymmetric c-command. The scope relations are such that the scoping morpheme asymmetrically c-commands the out-scoped morpheme. We can understand asym-

¹We should note here that the **HABITUAL** and the **PERFECT**, when they occur on the same root produce a very marginal result. The ordering of the **HABITUAL** and **PERFECT** however is easy to establish by transitivity. Thus the **HABITUAL** precedes the applicative, while the **PERFECT** follows it.

metric c-command as in (Kayne 1994:pg. 4): X asymmetrically c-command Y iff X c-commands Y and Y does not c-command X.

Once we establish the relative scopes for all the suffixes, we get the base or hierarchical order. The base order opens a way for understanding (part of the question) why morphemes come in the fixed order that they do: once morphemes have been combined by the syntactic operation merge, the hierarchy established by this first step of merge usually called external merge can be disrupted by movement also called internal merge (Chomsky (2001), Chomsky (2004)). Syntactic research over the last few years has succeeded in showing that movement of syntactic constituents occurs in a restrictive way. We will show in this chapter that the movements that disrupt the base order in the verb are restricted in a manner strikingly similar to the movements that disrupt the base order in the noun phrase (cf. Cinque (2005)). So both Universal 20 (the range of permissible disruptions in the NP) and affix ordering in Kĩtharaka fall under the same generalization.

Morphemes therefore relate to each other scopally, the scopes give the hierarchical order and a restricted movement mechanism gives the surface order. The scopes and surface order are mediated by movement.

1.2 Scopes

Since scopes are crucial for determining the base order and consequently the movement mechanisms that alter the base order, we will spend quite some time determining pairwise scopes of the affixes in (1). For clarity, the relevant morpheme is always put in bold. The morpheme scoping over the other in addition is underlined, while the out-scoped morpheme is italicized.²

Let us start with the first pair - COERCE and ABLE. Assuming that syntactic merge works bottom-up (Chomsky (1995)), and in a pairwise manner, there are two readings we expect depending on the order in which the two morphemes are combined with a subtree containing the root. These readings are

²In all the examples, a numeral on the gloss of a noun indicates noun class. Where the marker of noun class is clear, we separate the numeral indicating noun class, and the noun gloss by a dash (-). When it is not clear what the marker of noun class is, we separate the numeral marking noun class, and the noun gloss with a period (.). For details on Kĩtharaka noun classes see Lindblom (1914), wa Mberia (1993). A numeral on subject agreement, a pronoun or a nominal modifier gloss indicates agreement with a noun of a particular class. ^ on vowels indicates tense vowels, not tone. Thus *û* is used for phonetic o, and *î* for phonetic e. This is the orthographic style used in the Kĩtharaka bible and will be used here. The judgments reported in this thesis are mainly those of the author who is a native speaker of Kĩtharaka. These judgments have been checked with another speaker of Kĩtharaka Kaburi Kwenga.

summarized in (2).

- (2) a. [X coerce [Z to be easy to V]]
 b. [Y easy [to coerce to V Z]]

In (2a), *ABLE* is added first triggering passivization and giving rise to an “easy” reading: Z was easy to V. This first stage of the derivation is actually possible and gives the expected reading, (3).

- (3) Mbûri n-î-ûrag- **îk-** ir-e
 9.goat F-SA₉-kill- ABL- PFV-FV
 ‘The goat was easy to kill.’ (It wasn’t strong.)

Then we can add *COERCE*, and introduce the matrix subject, getting the reading: X coerced Z to be easy to V. The subject of the sentence is interpreted as a coercer.

If the order of merge of *COERCE* and *ABLE* is as in (2b), the causative construction would be built first, (4).³

- (4) John n-a-ûrag- **ith-** iir-i-e Maria mbûri
 1.John F-SA₁-kill- CRC- PFV-IC-FV 1.Maria 9.goat
 ‘John coerced Maria to kill the goat.’ (Maria is an animal rights activist and will not kill the goat on casual instructions.)

ABLE which triggers passivization and an easy reading is added, and the embedded external argument is moved to the subject position being higher than the direct object, and given a restriction to attract the closest of “similar things” (Relativized Minimality (Rizzi 1990), attract closest (Chomsky 1995)). In this scenario, the argument promoted to the subject position is interpreted as the causee (the one who is coerced). Furthermore in this second scenario, it is coercion which is expected to be easy to achieve, not the coerced event.

³The reader should not be confused by the causative morpheme *i* which accompanies *COERCE* and which I gloss as IC for INNER CAUSATIVE. This morpheme is usually used to transitive verbs. A verb like *ûraga* ‘kill’ however is already transitive without *i*. In a simple transitive sentence therefore, *ûraga* would occur without *i*. When *COERCE* (*ith*) is added to *ûraga* however, *i* shows up even though it is not semantically significant. While one might be tempted to guess that *COERCE* is a complex morpheme (*ith-i*), it would be mysterious why a single morpheme would allow splitting by another morpheme, e.g. the perfective, (4). Crucially however, when *COERCE* and *ABLE* co-occur (5), *i* cannot appear, and we cannot account for the absence of *i* based on the phonology. The sentence with *ABLE* and *COERCE* provides direct evidence that *ith* and *i* must be treated as different morphemes.

Let us turn to what the facts tell us. (5) shows that the subject is interpreted as the causee, not the coercer.

- (5) Maria n-a-ûrag- *ith-* **îk-** ir-e mbûri
 1.Maria F-SA₁-kill- CRC- ABL- PFV-FV 9.goat
- a. *Maria coerced the goat to be easy to kill. (by tying its legs together)
- b. ✓ Maria was easy to coerce to kill the goat but the killing of the goat was not easy as the he goat was quite strong.

(5b) also shows that the it is coercion that is easy to achieve, not the coerced event. *ABLE* therefore scopes over *COERCE*. Given our assumption that scopes translate into c-command, *ABLE* asymmetrically c-commands *COERCE* in the base hierarchy.

Note that there is nothing odd with the meaning in (5a) where *ABLE* scopes below *COERCE*. In fact this meaning can be expressed by an English-like analytic TEMA causative construction.

- (6) John n-a- **tem-** ir-e mbûri j-ûrag- **îk-** a
 1.John F-SA₁- make- PFV-FV 9.goat SA₉-kill- ABL- FV
 ‘John made the goat easy to kill.’ (by tying its legs together)

The impossibility of *ABLE* to scope below *COERCE* is a consequence of the order in which the two morphemes must merge: *ABLE* over *COERCE*. This is a result one would expect under the mirror principle seeing *COERCE*, which is closer to the root, scopes below *ABLE*, which is further from the root.

Proceeding inside out, let us examine the next pair *COERCE* and *ERRATIC*. Again there are two orders in which the two morphemes could combine giving rise to the scopes in (7). In (7a), the *ERRATIC* is added before *COERCE* and therefore modifies the coerced event. In (7b), the *ERRATIC* is added after *COERCE* is added and therefore modifies coercion.

- (7) a. [Z coerce [Y to irregularly V X]]
 b. [Z irregularly coerce [Y to V X]]

Let us establish the facts step by step. In (7a), a clause with the *ERRATIC* morpheme is built first giving the reading that Y carried out an event irregularly. This derivation is possible, (8). (In this example, an optional glide *j* can be inserted between the root *nyu* and the *ERRATIC*, *ang*, to break hiatus.)

- (8) Maria n-a-nyuj- **ang-** ir-e ndawa
 1.Maria F-SA₁-drink- ERR- PFV-FV 10.medicine
 ‘Maria drank the medicine at 7.00 am, 7.50 am, 9.00 am, 11.00 am.’

The causative construction would then be built giving rise to the reading that Z coerced Maria to take medicine, and Maria took the medicine at irregular intervals: at 7.00 am, 7.50 am, 9.00 am, 11.00 am.

In the second scenario, (7b), the causative construction is built first. The ERRATIC is added and this time it modifies coercion. The available reading tells us that only the derivation in (7b) is possible: ERRATIC is added after COERCE.⁴

- (9) Nasi n-a-nyu- **ith-** **ang-** ir-i-e Maria ndawa
 1.nurse F-SA₁-drink- CRC- ERR- PFV-IC-FV 1.Maria 10.medicine
- a. ✓ At 7.00 am, 7.50 am, 9.00 am, 11.00 am, the nurse coerced Maria to take medicine, and she finally took the medicine. (Maria belongs to a sect that does not accept taking medicine.)
- b. *Once, the nurse coerced Maria to take medicine at 7.00 am, 7.50 am, 9.00 am, 11.00 am. (Taking this drug so often could be harmful to health.)

This is another result which is expected under the mirror principle since ERRATIC follows COERCE in the linear sequence of affixes. The ERRATIC morpheme therefore merges above COERCE in the base hierarchy of affixes.

Let us turn to the third pair, ABLE and ERRATIC. Given the meaning of the two morphemes, two scopes are possible depending on the order in which the morphemes are combined. These scopes are given in (10a) and (10b). In (10a) ERRATIC is added before ABLE and therefore modifies the event. In (10b), ERRATIC is added after ABLE and thus scopes over the “easiness”.

- (10) a. [Y easy [to V irregularly]]
 b. [irregularly [easy Y to be V-ed]]

Let us turn to the data. In (10a), a sentence with the ERRATIC is built first. (11) gives an example of such a sentence, with the event occurring at irregular

⁴The ERRATIC morpheme in addition to conveying that an event occurs irregularly may convey two other readings: that an event occurs quickly, usually with bad results, and a comparative reading. These readings do not behave exactly like the irregular reading on an event. We touch on these other readings in chapter 2 section 2.2, and chapter 3 section 3.3.2.

intervals.

- (11) Maria n-a-ring- **ang-** ir-e mu-uro
₁.Maria F-SA₁-cross- ERR- PFV-FV ₃-river
 ‘Maria crossed the river at 7.00 am, 7.30 am, 7.45 am.’

ABLE is then added triggering passivization and an “easy” reading: The river was easy to cross at 7.00 am, 7.30 am, 7.45 am.

In the second situation, (10b), ABLE is added triggering a passive transformation and an “easy” reading: the river was easy to cross. This derivation is illustrated in (12).

- (12) Mu-uro n-û-ring- **îk-** ir-e
₃-river F-SA₃-cross- ABL- PFV-FV
 ‘The river was easy to cross.’

The ERRATIC morpheme is finally added modifying the easiness: Only at irregular times (at 7.am, 7.30 am, 7.45 am) was it easy to cross the river. The facts tell us that what is irregular is the event, not the easiness, (13). ABLE therefore scopes over ERRATIC even though it is closer to the root than the ERRATIC. This is a mirror principle violation.

- (13) Mû-ûro n-û-ring- **îk-** *ang-* ir-e
₃-river F-SA₃-cross- ABL- ERR- PFV-FV
- a. ✓The river was easy to cross at 7.am, 7.30 am, 7.45 am - the river was not flooded, so I could always walk across.
 - b. *Only at 7.am, 7.30 am, 7.45 am 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.

Given the scopes, ABLE must merge over the ERRATIC given our initial assumption that scopes translate into asymmetric c-command. The kind of data in (13) is crucial since it determines the movement mechanism that derives the surface order. We will come back to this movement mechanism in section 1.3.

Let us summarize the results we have so far. We have encountered a case of mixture of directionality of scope. Both ABLE and ERRATIC scope over COERCE, showing a right to left scope. On the other hand ABLE scopes over ER-

RATIC showing a left to right scope. We can illustrate this mixture in scope directionality by putting ABLE and ERRATIC in a box as one chunk which scopes over COERCE, but showing that internal to the box, the scopes go in the opposite direction, (14).

- (14)

root < COERCE < <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="padding: 2px;">ABLE > ERRATIC</td></tr></table>	ABLE > ERRATIC
ABLE > ERRATIC	

 (Narrow edge of > indicates scope direction)

Let us turn to the morpheme immediately following the ERRATIC - the HABITUAL. The HABITUAL scopes over all the suffixes to its left in line with the mirror principle. Consider first HABITUAL and the innermost suffix in (1), COERCE. The two morphemes could combine in two ways, as schematized in (15).

- (15) a. [X once coerce [Y to V Z habitually]]
 b. [X habitually coerce [Y to V Z]]

In (15a), the HABITUAL would be added first. This derivation is exemplified in the transitive sentence in (16), where the HABITUAL triggers a stative reading of the verb, a reading unavailable in the absence of the HABITUAL.

- (16) John n-a-nyuj- **ag-** a thigara
 1.John F-SA₁-drink- HAB- FV 10.cigarrete
 'John is a smoker.'

COERCE would then be added triggering the reading X coerced Y to be a smoker. In contrast to (15a), the HABITUAL would be added after COERCE has been merged in (15b), triggering a reading where coercion is habitual. The facts tell us that this latter derivation is the right one.

- (17) Maria n-a-nyu- **ith-** ag- i-a John thigara
 1.Maria F-SA₁-drink- CRC- HAB- IC-FV 1.John 10.cigarrete
- a. ✓ Maria habitually coerces John to smoke. (but John never smokes)
 b. * Maria once coerced John to be a smoker.

As before, I take the impossibility of the stative reading in (17b) to be a result of the order of merge of the two morphemes: HABITUAL OVER COERCE. Note that the absence of the stative reading in (17b) cannot be ruled out by a general requirement that COERCE cannot embed states. This is possible, (18).

- (18) Tw-ana i-tû-tuum- **ith-** iir-i-e ngina kî-ongo
 13-child F-SA₁₃-ache- CRC- PFV-IC-FV 1.mother 7-head
 ‘The children made the mother to have an headache.’ (by playing and shouting loudly in the sitting room, where the mother was)

Note also that one cannot claim that the HABITUAL scopes over both the coercing and the coerced event. Sometimes we might get this illusion. However this is an illusion that comes from the fact that when coercion is successful, the coerced event also takes place. We see the proper scopes when coercion does not succeed. Only the coercing event then can be understood as habitual (see (17a) above).

Let us turn to the next pair, HABITUAL and ABLE. To make the scopes clear, let us use our usual bracketting. We expect two scopes depending on the order of merge of the two morphemes, (19a), where ABLE scopes over HABITUAL and (19b) where HABITUAL scopes over ABLE.

- (19) a. [Y easy [to V repeatedly]]
 b. [Y usually [easy to V]]

In (19a), the HABITUAL is added first, as in the sentence in (20).

- (20) Maria n-a-nyuj- **ag-** a ndawa
 1.Maria F-SA₁-drink- HAB- FV 10.medicine
 ‘Maria takes medicine habitually.’ (e.g every day)

ABLE is then added triggering passivization and an easy reading: this medicine is easy to take repeatedly. In (19b), ABLE is added first, giving rise to the reading: the medicine was easy to take. The HABITUAL is then added modifying the easiness: the medicine is usually easy to take. This latter ordering of operations is confirmed by the data: HABITUAL scopes over ABLE.

- (21) Ndawa i-no n-i-nyu- **ik-** **ag-** a
 10.medicine 10-this F-SA₁₀-drink- ABL- HAB- FV
- a. ✓ This medicine is usually easy to take: On most occasions it comes with a sugar coating.
 b. * This medicine is easy to take repeatedly: It doesn’t cause bad side effects in the body after long usage.

We take the data in (21) to indicate that *HABITUAL* merges higher than *ABLE* in the hierarchy of the clause.

Consider the third pair, *HABITUAL* and *ERRATIC*. The *HABITUAL* could be added first, and then the *ERRATIC*, giving rise to a reading where an irregular event occurs repeatedly, (22a). Alternatively, the *HABITUAL* could be added after the *ERRATIC* giving us an interpretation where a habitual event occurs unpredictably, (22b).

- (22) a. [irregularly [occur repeatedly]]
 b. [usually [occur irregularly]]

The data confirm that *HABITUAL* is added after *ERRATIC* since the available reading is that of an habitual event that occurs irregularly, (23a).

- (23) Mbura n-i-ur- *ang- ag-* a
 10.rain F-SA₁₀-rain- ERR- HAB- FV
 Literal: it rains erratically.

- a. It rains every week, but unpredictably.
 b. *It rains every other week, but on each of the days of the week.

HABITUAL therefore scopes over *ERRATIC* in the base hierarchy.

Let us summarize our findings again. We have seen that both *ABLE* and *ERRATIC* scope over *COERCE*. We also also seen that *ABLE* closer to the root scopes over *ERRATIC*, which follows it. Finally, we have shown that *HABITUAL* scopes over *COERCE*, *ABLE* and *ERRATIC*, a result that augers well for the mirror generalization since *HABITUAL* follows the three morphemes. These scopes are summed up in (24).

- (24)

root < COERCE < <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="padding: 2px;">ABLE > ERRATIC</td></tr></table> < HABITUAL	ABLE > ERRATIC
ABLE > ERRATIC	

Let us turn to the two outmost suffixes: *HABITUAL* and *PERFECT*. The *HABITUAL* and the *PERFECT* when they occur on the same verb produce a very marginal sentence. It can be shown from transitivity however that *HABITUAL* precedes *PERFECT*: the applicative intervenes between *HABITUAL* and *PERFECT* - *HABITUAL* <

APL

 < *PERFECT* (see chapter 2 for details). Given the marginal status of this construction, the scopes are hard to tell.

We are fortunate however because there exists an auxiliary construction where the *HABITUAL* and *PERFECT* can co-occur (see chapter 2 for details on this

construction). The HABITUAL occurs on AUX and the PERFECT on the following verb, (25a). The converse ordering of the two suffixes is impossible (25b).⁵

- (25) a. Maria n-a-îg- **ag-** u-a a-rug- **îit-** e
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-cook- PFC- FV
 ‘Maria usually has cooked.’
- b. *Maria n-a-îg- **îit-** u-e a-rug- **ag-** a
₁.Maria F-SA₁-be- PFC- VR-FV SA₁-cook- HAB- FV

The auxiliary construction provides us with a scenario where we can deduce the scopes directly from the syntax: HABITUAL SCOPES PERFECT, seeing that it attaches to the BE auxiliary, not to V. This conclusion is based on the following argumentation: Verbs in the same functional sequence merge in some hierarchy. An auxiliary naturally will merge above the main verb. The suffixes themselves merge in some hierarchy. Suffixes have another property: they are verb attractors. This is why they end up as suffixes after all. Attraction, as we know is subject to a locality restriction, relativized minimality, (Rizzi (1990)) or attract closest, (Chomsky (1995)). The suffixes therefore attract the closest verbal element from their c-command domain. If this is true, then the hierarchy of merge of the four elements HABITUAL, AUX, PERFECT and V must be as in (26). Hence HABITUAL is higher than PERFECT.

- (26) HABITUAL > AUX > PERFECT > V

(We should note here that the view of attraction above assumes that being a suffix and being a verb is different - suffixes and verbs are different categories. This is a view than one independently would need in a relativized account of locality - things that block others to move across them must be similar to some degree. One way to capture the similarity is to say closer things of the category X block movement of other things of the category X across them.)

Let us finally consider the scopes of the PERFECT (the outermost suffix) and the other suffixes. We will first need to understand some elementary meaning of the PERFECT though. On the classic view (Comrie (1976)), the PERFECT expresses that a situation that started in the past continues/is relevant to the present. In (27), for example, the mechanic has been repairing the bicycle from morning to the present.

⁵The BE auxiliary appears to have a vowel *u* whose semantics is not clear. This vowel occurs immediately before the final vowel. I have labelled it VR for root vowel, to signify that the AUX always requires it.

- (27) Makanika n-a-rûth- **îit-** e baicikiri kuuma rûkîrî
 1.mechanic F-SA₁-do- PFC- FV 9.bicycle from morning
 ‘The mechanic has repaired the bicycle from morning.’

Let us move on to the scopes between PERFECT and the other suffixes that precede it. The PERFECT scopes over all morphemes that precede it in (1), except the HABITUAL. Let us repeat the order of suffixes in (1) here for convenience.

- (28) root < COERCE < ABLE < ERRATIC < HABITUAL < PERFECT

Consider first the PERFECT and the innermost suffix, COERCE. If PERFECT is added before COERCE, we get a reading where coercion possibly is punctual, but the coerced event has been going on from some time in the past to the present, (29a). If PERFECT is added after coercion on the other hand, we get a reading where coercion has been continuous, without necessarily the coerced event having been continuous, (29b).

- (29) a. [X once coerce [Y to be V-ing from past to present]]
 b. [X from past to present coerce [Y to V]]

The results are that PERFECT is added after COERCE.

- (30) John n-a-rûth- *ith-* **îit-** i-e makanîka baicikiri kuuma
 1.John F-I.SA-do- CRC- PFC- IC-FV 1.mechanic 9.bicycle from
 rûkîrî
 morning
 Literal: John has been coercing the mechanic to repair the bicycle since morning.
- a. *John once shouted at the mechanic, and she has been repairing the bicycle since morning.
- b. ✓John has been pushing the mechanic to repair the bicycle since morning and she hasn’t started working on the bicycle yet.

What has to have started in the past, and to be continuing in the present is coercion, (30b) not the coerced event, (30a). Sometimes we might get the illusion that PERFECT scopes over both the coercing and the coerced event. However this depends on the success of coercion. When coercion is unsuccessful, only the coercing event can be understood to have started in the past,

and continuing in the present, as shown in (30a) above.

Consider the next pair PERFECT and ERRATIC. The PERFECT scopes over ERRATIC since the whole span of PERFECT has sub-events that are irregular, (31).

- (31) John n-a-thom- *ang- ït-* e kuuma rûkîrî
₁.John F-SA₁-read- ERR- PFC- FV from morning
 ‘From morning until now, John has read many times.’

The PERFECT also scopes over ABLE since within the whole span of PERFECT, an event has been easy to carry out.

- (32) Î-buku rî-rî i-rî-thom- *ek- eet-* e kuuma rûkîrî
₅.book ₅-this F-SA₅-read- ABL- PFC- FV from morning
 ‘From morning until now, this book has been easy to read.’

Let us summarize the whole result. We have seen that the morpheme closest to the root, COERCE is out-scoped by all the morphemes that follow it. We have however illustrated that the morphemes following COERCE do not always show right to left scope as expected under the mirror principle: ABLE and ERRATIC, although scoping over COERCE internally portray a left to right scope; HABITUAL and PERFECT although scoping over ERRATIC, ABLE and COERCE internally show a left to right scope. This result is summarized in (33).

- (33)

root < COERCE < <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">ABLE > ERRATIC</td></tr></table> < <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">HABITUAL > PERFECT</td></tr></table>	ABLE > ERRATIC	HABITUAL > PERFECT
ABLE > ERRATIC		
HABITUAL > PERFECT		

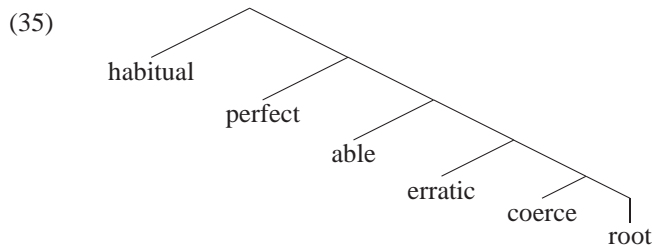
1.3 The derivation

We claimed that morphemes relate to each other in terms of scope. We have done this assignment and established the scopes in (33), which we repeat in (34) for convenience.

- (34)

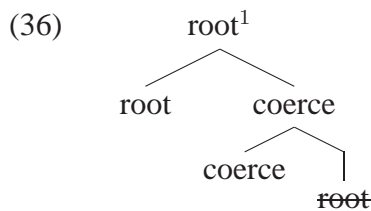
root < COERCE < <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">ABLE > ERRATIC</td></tr></table> < <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">HABITUAL > PERFECT</td></tr></table>	ABLE > ERRATIC	HABITUAL > PERFECT
ABLE > ERRATIC		
HABITUAL > PERFECT		

We also claimed that scopes translate into asymmetric c-command, and that with all the scopes, we get the base hierarchical order. We can unpack the scopes in (34), into the syntactic tree in (35), and get our base order.

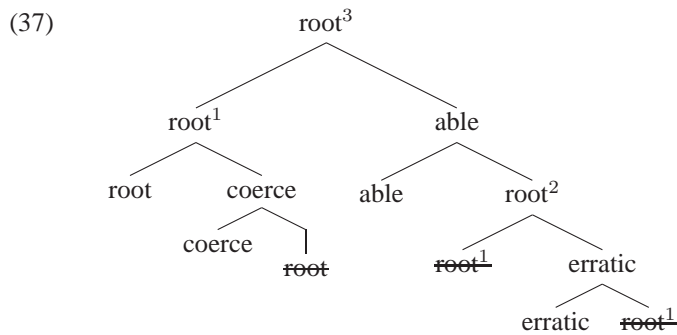


The third claim was that when we have established the base order, we get a way of understanding the movement mechanism that derives the surface order. As one might already see, given the hierarchy in (35), the PF form derives by phrasal movement (for related analyses see Cinque (2005), Abels and Neeleman (2006) for (re)orderings in the NP; Buell and Sy (2005) for affix ordering in Wolof; Koopman (2005) for affix ordering in Korean (and Japanese); Koopman and Szabolcsi (2000) for verbal clustering and Aboh (2004) for reorderings with adverbs in Malagasy).

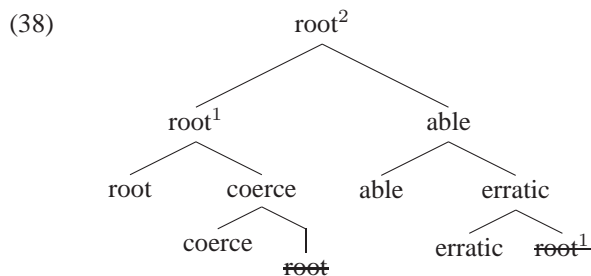
Let us show how the surface order derives in Kîtharaka by phrasal movement. First, the root moves above COERCE, (36). (Here and henceforth, I will for convenience label the projection hosting a moved item, with the label of the item in the specifier. Thus if the root is the specifier, I will label the projection as $root^1$, and $root^2$, $root^3$ e.t.c for subsequent landing sites of the root.)



Second, ABLE and ERRATIC are merged above the structure in (36), and the whole chunk in (36) moves Spec-to-Spec past ERRATIC and ABLE landing in [Spec, $root^3$] as shown in (37). Note that the movement past ERRATIC and ABLE does not invert the order of these two morphemes. This movement creates a mirror principle violation as now ABLE appears linearly closer to the root than ERRATIC, yet ABLE scopes over ERRATIC.

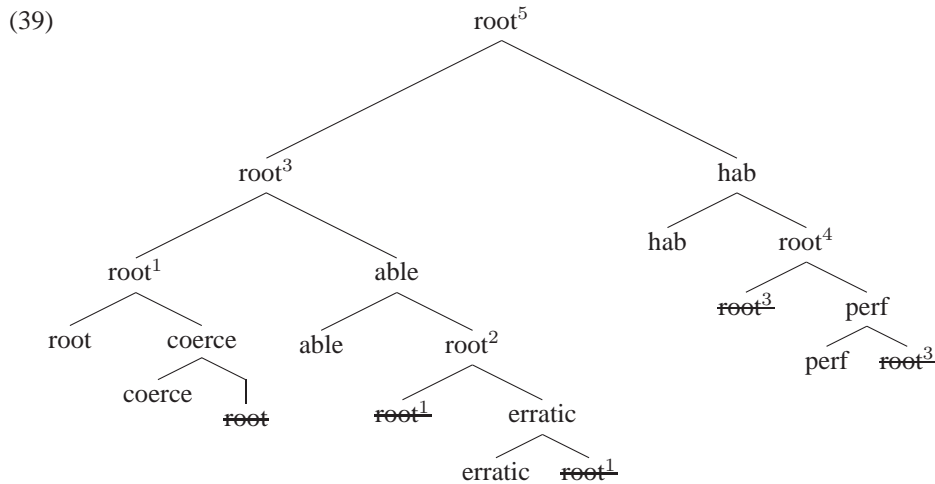


Note that there is another option for moving the root+COERCE past ERRATIC and ABLE - root+COERCE can move in one step and land directly above ABLE, without the intermediate step of movement between ERRATIC and ABLE, as shown in (38).



Nothing immediately rules out this option given that root+COERCE are undergoing phrasal movement. Perhaps this movement is ruled out by a requirement that whenever possible, suffixes in the projection line of a verb be licensed by being immediately c-commanded by a subtree containing the verb. Immediate c-command is defined as follows (Richards 2001:pg. 217): A immediately c-commands B, iff the lowest node dominating A dominates B, and there is no C such that A asymmetrically c-commands C, and C asymmetrically c-commands B.

Let us turn to the final step of movement. The PERFECT and HABITUAL are merged on top of root³ (cf. (37), (39)) and then the whole of root³ moves Spec-to-Spec past the PERFECT and the HABITUAL, finally landing in [Spec, root⁵]. Note again that movement past HABITUAL and PERFECT does not alter the linear order of the two morphemes. This movement gives rise to a mirror principle violation since the HABITUAL is closer to the root in the surface string than PERFECT.



The derivation in (39) gives us the right PF form: root-COERCE-ABLE-ERRATIC-HABITUAL-PERFECT.⁶

We have now derived the surface order from the base we established in (35) by phrasal movement. But as one might have noticed, these phrasal movements are not randomly done: whatever moves has an overt copy of the verb. This restriction on movement sounds familiar from work on Universal 20.

1.4 Universal 20

The type of movements used to derive the surface order of suffixes in Kîtharaka curiously resemble those that Cinque (2005) uses to derive Greenberg’s universal 20. Greenberg’s universal 20 is a generalization concerning the ordering of modifiers in the extended projection of the noun (cf. Greenberg (1966)). The original formulation of U20 by Greenberg (1966:pg. 87) goes: “When any or all of the items (demonstrative, numeral and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or the exact opposite.” The first part of Greenberg’s formulation, that pre-nominally, the order of modifiers is Dem>Num>Adj>N still holds (see e.g. Hawkins (1983), Cinque (2005)). However, the second

⁶Abels and Neeleman (2006), Abels and Neeleman (2007) would have a slightly different implementation. Thus sequences showing right to left scope e.g the root and COERCE do not require movement for linearization, the PF form of the two items can be read off before movement in a left branching subpart of a tree. But forms showing left to right scope like the two zones portraying mirror principle violations would require movements similar to those in (37) and (39).

part of the formulation regarding the ordering of the post-nominal modifiers has been shown to be too restrictive and permissive at the same time (see Hawkins (1983), Cinque (2005) for details). Based on comparative work, Cinque shows that from a combination of four elements, Dem, Num, Adj, N, only 14 orders are attested, out of a possible 24 orders.

So how does Cinque derive the attested orders in the NP? To derive only these orders, Cinque (2005) makes the following assumptions (among others concerning markedness of movement which I will not go into here):

- The hierarchical order in the NP is Dem > Num > A > NP (> for c-command). Dem, Num and A are introduced as specifiers of heads.
- Neither head movement nor movement of a phrase not containing the (overt) NP is possible (except perhaps for focus-related movements of phrases to a DP initial position).
- All relevant movements are to a c-commanding position.
- All projections are modeled in a way such that specifiers precede heads, which in turn precede complements (following work by Kayne (Kayne (1994)))

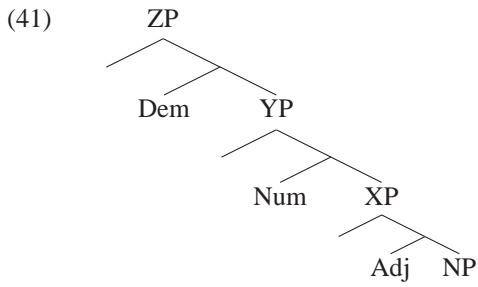
The last two assumptions combine to ensure that movement is to the left (cf. also Kayne (1994)).

To see how the above assumptions derive the ordering of some of the attested orders in the NP, let us consider the ordering of nominal modifiers in English, (40a), Kĩtharaka, (40b), Aghem, (40c), and Yoruba, (40d).

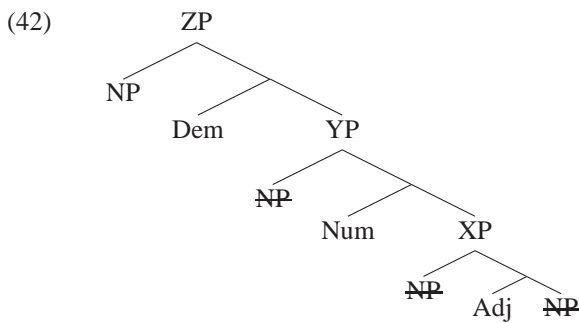
- (40)
- a. Dem Num Adj N (English)
 - b. N Dem Num Adj (Kĩtharaka)
 - c. N Adj Dem Num (Aghem; Hyman 1979)
 - d. N Adj Num Dem (Yoruba; Hawkins 1983:pg. 119)

The base order gives for free the English order, (41).⁷

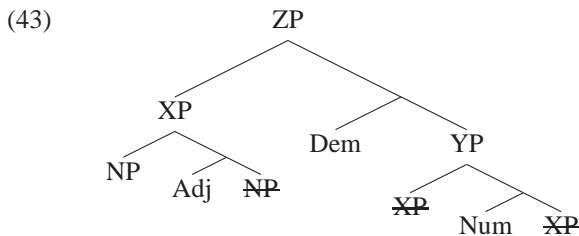
⁷The structures we present below are a simplification of Cinque's original structures (for the detailed structure see (Cinque 2005:pg. 317)). We have left out the many agreement projections and we have not merged the modifiers as specifiers of some heads since we can demonstrate the logic of his theory with a simpler structure, as actually shown in Abels and Neeleman (2007).



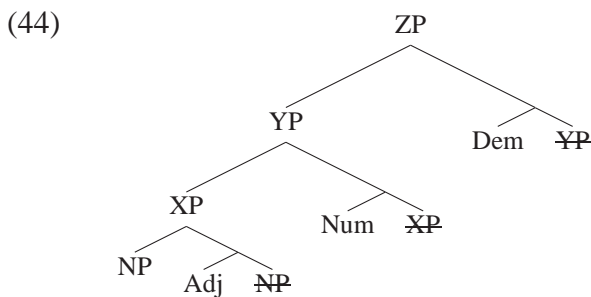
Cyclic Spec-to-Spec movement of the NP to the initial position of the DP gives rise to the ordering in Kîtharaka.



In Aghem, the NP moves to an XP immediately above the adjective, and this XP moves Spec-to-Spec to the initial position of the DP.



In Yoruba, the NP moves to the Spec of an XP above the Adj, then this XP moves to the spec of a YP above Num, then YP moves to the Spec of a ZP above Dem, reversing the ordering of modifiers.



These latter movements involving (successive) pied-piping of specifiers are called roll-up or snowballing movements.

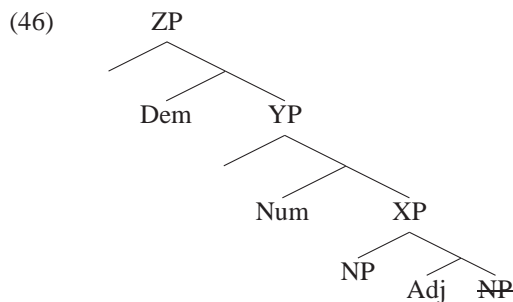
A quick check on the Kîtharaka derivation confirms that it strikingly resembles the derivations in the noun phrase. In particular, the derivation resembles that in Aghem, with an initial step of roll-up followed by cyclic movement. The syntax of free modifiers of a head and that of affixes therefore could be argued to be similar: it is governed by U20 type movements. In rest of the thesis, I refer to Cinque's technology as *dragging movements*: when the head of a phrase is not moving alone, it is dragging stuff along.

Let us now briefly show how the above assumptions rule out some of the unattested orders. We give two unattested orders in (45).

- (45) a. *Dem Adj Num N
b. *N Num Dem Adj

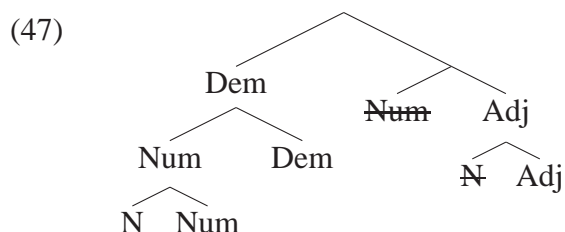
Consider (45a). Because the noun is *in situ*, the modifiers must be in the base order since disruptions in DP are sanctioned by moving a sub-tree containing the NP. In (45a) however, Adj has moved above Num, without NP. Hence (45a) is ruled out.

Lets us turn to (45b). In order to derive this order in a way consistent with Cinque's technology, the NP must move above the Adj. This gives us the order where NP is between Num and Adj: Num-NP-Adj, (46).



We expect then Num and NP to move above Dem, stranding Adj behind. This is however impossible given the syntax in (46) because there is no subtree made up Num+NP, at the exclusion of Adj.

The other way the order in (45b) above would derive is by head movement. N moves and adjoins to Adj. N excorporates and adjoins to Num, and then N+Num incorporates to Dem. This derivation is shown in (47).



This derivation is however also impossible by Cinque's assumptions: no head movement. Hence the order in (46b) cannot be generated.

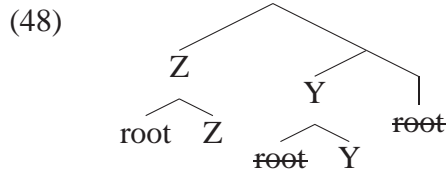
1.5 The mirror principle

To put the current work in context, we will show below that the mirror principle is too restrictive to account for scopes in Kîtharaka.⁸ To derive the effect that morphology reflects the order of merge in the syntax such that a morpheme closer to the root is merged before a morpheme that follows (cf. Baker (1985), Baker (1988a)), the mirror principle minimally requires that (i) morphemes are added in some hierarchy, one morpheme at a time (ii) for the suffixes, that successive head-movement of the root or root+some suffixes occurs without excorporation, and (iii) that head movement is subject to the head movement constraint (Travis (1984), Baker (1988a)).

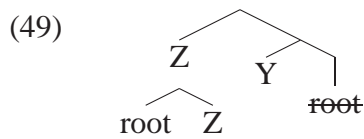
If morphemes are not added in some hierarchy one at a time, we couldn't begin to draw a parallelism between the order of morphemes, and the syntactic structure to begin with.

Furthermore, if we allowed for excorporating head movement then we couldn't state the mirror principle as originally stated where a suffix closer to the root is added in structure before a following suffix. Excorporation will create a scenario where, a suffix Y, merged before Z, appears further from the root than Z. We illustrate this in (48): the root first incorporates to Y, then excorporates and moves to Z, creating a configuration where Y merged earlier than Z appears further from the root than Z in the linear string.

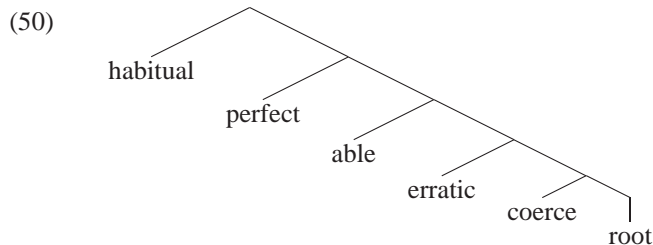
⁸Hyman (2003b) has already shown the mirror principle to be too restrictive (See also Alsina (1999), Williams (2002)). To loosen the mirror system, Hyman goes for an approach where suffix ordering in Bantu is governed by an OT-style ranking of two constraints: *template* - a requirement that suffixes conform to a template inherited from a proto-language and *mirror* - a requirement for suffix ordering to be compositional. The current approach using less restrictive *dragging movements* builds on Hyman's intuition: that of loosening the mirror principle. Furthermore, the current approach which is a superset of the mirror principle accounts for the facts that Hyman examined.



We couldn't also conclude that a morpheme closer to the root is merged earlier than a following morpheme if we allowed heads to move skipping other heads. Such movements again would give a scenario where Y, merged earlier than Z would appear further from the root than Z. We illustrate this in (49).



Below we show that if we stick with mirror principle consistent assumptions such as local head-movement and no excorporation, we cannot derive the correct surface order in Kĩtharaka. Consider again the base order we established for the five suffixes in Kĩtharaka, (50).

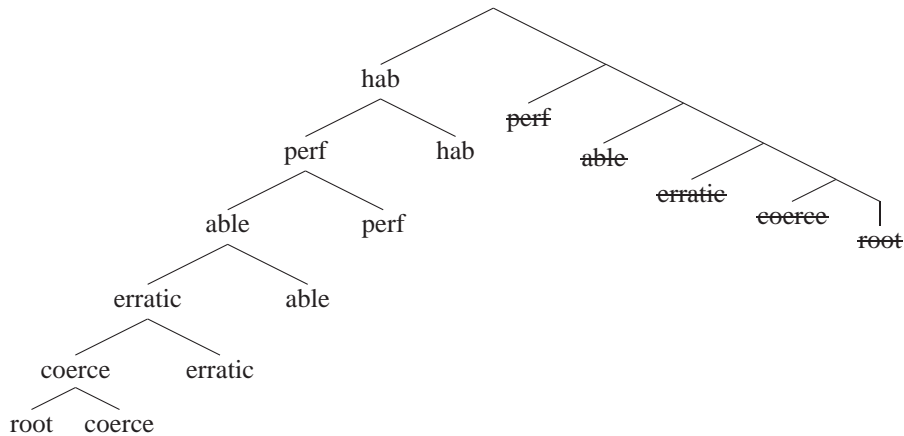


Given the this base, successive head movement without excorporation would lead to the wrong surface string since the morphemes in the two zones showing mirror principle violations would be reversed, (51a). The right surface string should be as in (51b).

- (51)
- a. *root < COERCE < [ERRATIC < ABLE] < [PERFECT < HABITUAL]
- b. ✓ root < COERCE < [ABLE < ERRATIC] < [HABITUAL < PERFECT]

We provide the derivation leading to the illicit order in Kĩtharaka in (52): the root adjoins cyclically to the heads merged above it.

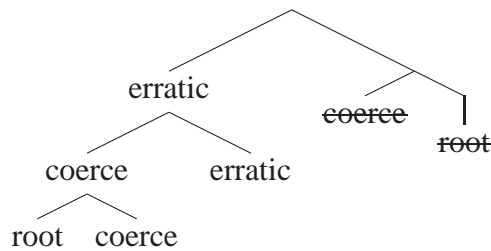
(52)



Note that even if we relaxed the mirror system and allowed for excorporation, that still wouldn't derive the surface order. To show this consider the following derivations:

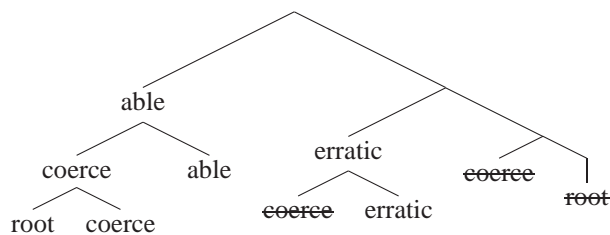
First we adjoin the root to COERCE, and then we adjoin the root+COERCE to ERRATIC, (53).

(53)



We merge ABLE, and then we excorporate COERCE from ERRATIC and adjoin it to ABLE, (54).

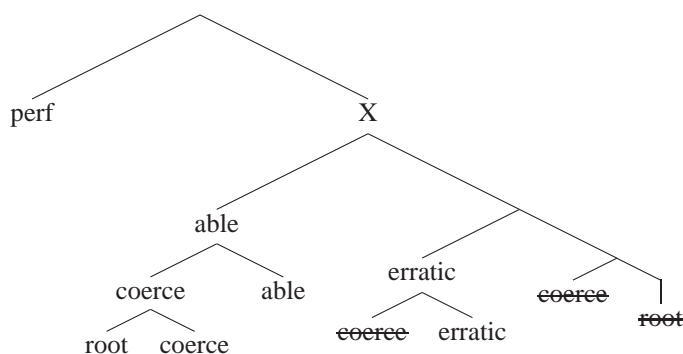
(54)



So far so good: we get the right surface order: root-COERCE-ABLE-ERRATIC.

In the next step we merge PERFECT, as shown in (55).

(55)



All the morphemes in (55) precede the PERFECT, so we want to move all of them ACROSS PERFECT. The way to make all these morphemes precede PERFECT is to move the constituent that contains all the suffixes, X, and adjoin it to PERFECT. This is however impossible given that X is a phrasal category: X is on the main projection line and therefore cannot be an X^0 category by X-bar theory (Chomsky (1970), Jackendoff (1977)). Furthermore, phrases cannot adjoin to heads (see e.g. Kayne (1994)).

There is no way therefore to derive the surface order of the five suffixes in Kîtharaka through mirror consistent head movement.

Note that a combination of excorporating head movement and phrasal movement can derive the right surface string. Thus for the lower part of the structure, we can adjoin the root to COERCE, then root+COERCE adjoins to ERRATIC, and then root+COERCE excorporates from ERRATIC and adjoins to ABLE stranding ERRATIC, as already shown in (54). After this, we can do phrasal movement of this whole structure ACROSS PERFECT. This will give the right result. We dis-prefer this combination of head movement and phrasal movement because of parsimony. In fact head movement mimics the very effects of *dragging movements*: head movement is *dragging movements* in disguise.

1.6 Dragging movements

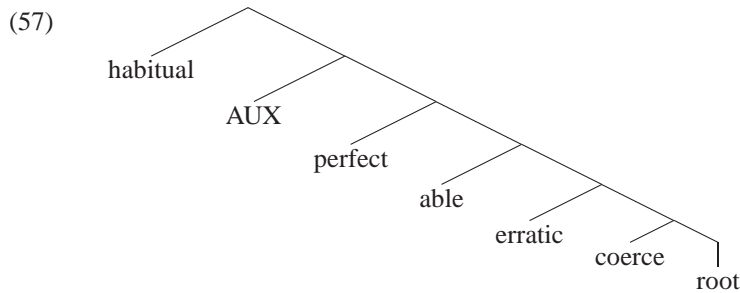
We have shown in this chapter that the right surface order of suffixes in Kîtharaka, derives from a base order established using scope by moving a subtree containing the root leftwards. The root therefore must be in the moved chunk - dragging along the other suffixes in the moved chunk.

1.7 Appendix I: The derivation with AUX

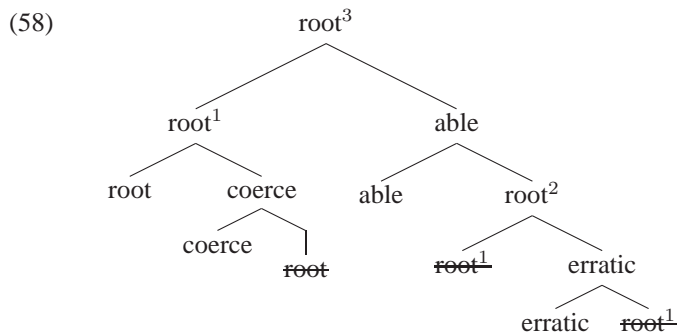
Consider the scopes in a context with an auxiliary and a main verb, (56).

(56) $\boxed{\text{root} < \text{COERCE} < \boxed{\text{ABLE} > \text{ERRATIC}} < \boxed{\text{HABITUAL} > \text{AUX} > \text{PERFECT}}$

The base hierarchy would be as in (58). (The auxiliary must merge immediately below *HABITUAL* given that (i) *HABITUAL* can attract it (ii) *PERFECT* cannot attract it - it cannot since *AUX* is merged above *PERFECT*. Attraction of *AUX* by *PERFECT* would be a case of downward movement, movements which are not allowed by the system that accounts for word order variation in the noun phrase, and which we are adopting in this thesis.)

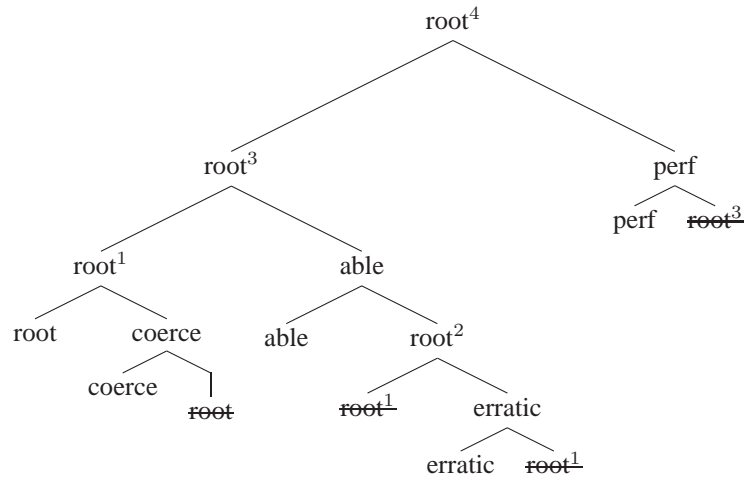


Ignoring details about the merge of prefixes, and assuming a bottom-up model of phrase structure building (Chomsky (1995)), the surface order derives in the following stages. First the root moves past *COERCE* and *root+COERCE* moves Spec-to-Spec past *ERRATIC* and *ABLE* landing in [Spec, *root*³], (58).



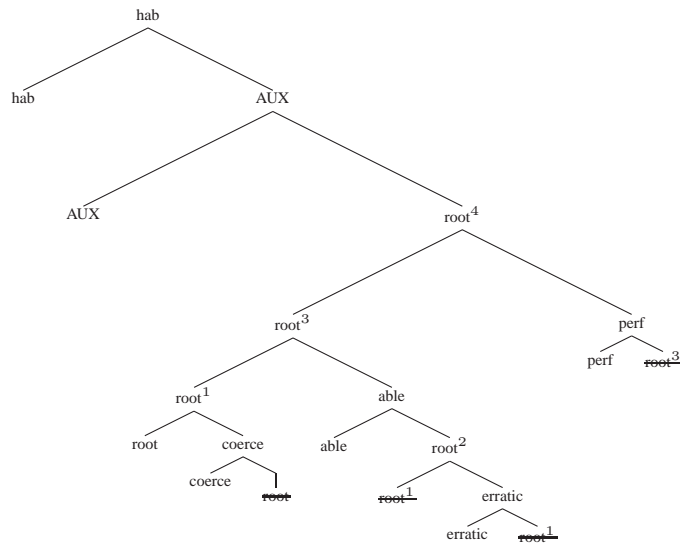
The *PERFECT* is then merged, and *root*³ moves above it, (59).

(59)

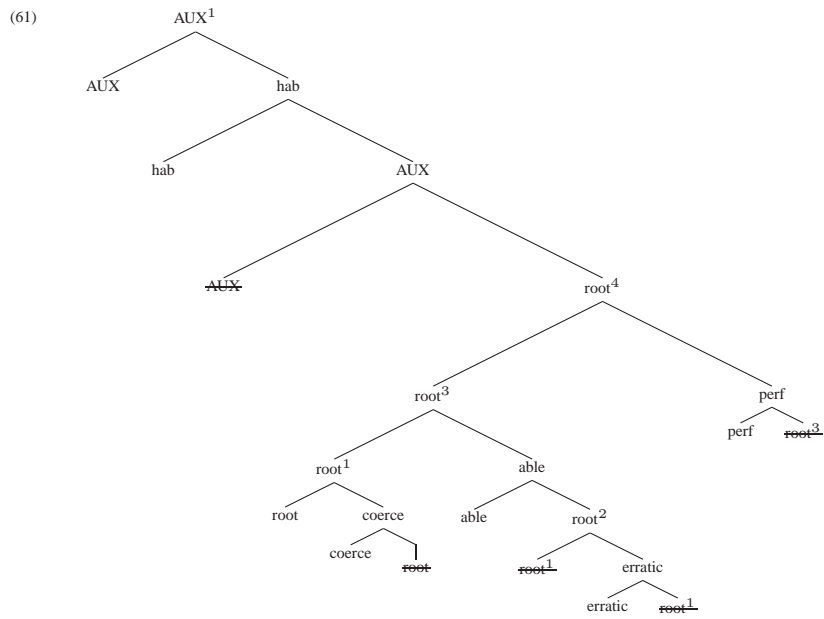


The auxiliary is merged, and then HABITUAL is merged above it, (60).

(60)



Finally AUX moves above $HABITUAL$. (We will revise this derivation a bit in Appendix A.)



The derivation containing the auxiliary also conforms to Cinque's technology since what is moved is always a verbal element, or a constituent containing a verbal element.

Chapter 2

Expanding the habitual perfect zone

2.1 Non-mirror surprises

We discovered two surprising facts in the last chapter. One of them is that ABLE SCOPES OVER ERRATIC and the other is that HABITUAL SCOPES OVER PERFECT. These pairs of suffixes have left to right scope, contrary to (some of) the other suffixes and contrary to what is usual in morphology (where further from root is higher in scope, a fact sometimes described as part of the “mirror principle”). The HABITUAL>PERFECT pair is particularly interesting to us, as it will have important consequences for the analysis of other morphemes. We will explore these consequences in this chapter. First we will confirm that HABITUAL SCOPES OVER PERFECT, then we will explore the consequences for the morphemes linearly between HABITUAL and PERFECT, and finally we will look at the consequences for the morphemes occurring linearly after PERFECT.

2.2 Confirming habitual>perfect

The evidence for the scope of HABITUAL OVER PERFECT in chapter 1 was based on the BE auxiliary construction. In this construction, HABITUAL occurs on BE, and PERFECT on the Verb. But one might think that the BE auxiliary construction is not a single functional sequence (hence forth fseq) and therefore does not tell us about the hierarchy of suffixes within an fseq. We will show that the AUX constructions do in fact reveal the behaviour of a single fseq, by contrasting them with the apparently similar TEMA causative constructions. First we show that TEMA allows freedom in the placement of suffixes: either on TEMA, or on the verb. AUX on the other hand allows these suffixes only

on V. Second, we show that the same suffixes can be repeated on TEMA and on the verb in the same linear order, confirming that TEMA gives rise to a bi-clausal situation. AUX on the other hand never allows the same suffixes to be repeated on the auxiliary and V and therefore the structure is mono-clausal. Finally we show that the same morpheme can appear twice on TEMA causative (on TEMA light verb, and on V) with different interpretations. AUX on the other hand never allows such suffixes to occur on both BE and V. This is because BE does not introduce another clause, and therefore there is no other position for such an affix within BE. On the other hand, TEMA introduces another clause and hence another position for an affix. AUX constructions are therefore mono-clausal, while TEMA constructions are bi-clausal.

At first sight, TEMA and AUX look similar. Both take verbal complements, (1) and (2).

- (1) Tw-ana tû-ka- **îg-** u-a tû-ceth-ir-e
 13-child SA₁₃-FT- be- VR-FV SA₁₃-play-PFV-FV
 ‘The children will have played.’
- (2) Mw-arimû a-gû- **tem-** a tw-ana tû-ceth-a
 1-teacher SA₁-T- make- FV 13-child SA₁₃-play-FV
 ‘The teacher has made the children play.’

AUX and TEMA constructions also look similar with respect to the suffixes they take on the V in their complement position. Take the two suffixes APPLICATIVE and ERRATIC which occur in the linear order ERRATIC-APPLICATIVE on a single root, (3).

- (3) Tw-ana tû-gû-ceth- **ang- îr-** a kî-eni-ni
 13-child SA₁₃-T-play- ERR- APL- FV 7-field-LC
 ‘The children have played at irregular intervals in the field.’

This order surfaces in the complement of both AUX and TEMA, (4), and (5).

- (4) Tw-ana tû-ka-îg-u-a tû-gû-ceth- **ang- îr-** a kî-eni-ni
 13-child SA₁₃-FT-be-VR-FV SA₁₃-T-play- ERR- APL- FV 7-field-LC
 ‘The children will have played at irregular intervals in the field.’

- (5) Mw-arimû a-gû-tem-a tw-ana tû-ceth- **ang-îr-** a kî-eni-ni
 1-teacher SA₁-T-make-FV 13-child SA₁₃-play-ERR- APL- FV 7-field-LC
 ‘The teacher has made the children play at irregular intervals in the field.’

On closer investigation however AUX and TEMA contrast sharply with respect to the freedom of placement of suffixes. The TEMA causative allows the two suffixes ERRATIC and APPLICATIVE to switch positions between the high light verb (TEMA) and the lower V, (6a), and (6b).¹

- (6) a. I-thimû-ni mw-arimû a-tem- **er-** a tw-ana tû-ceth-
 F-9.phone-LC 1-teacher SA₁-make- APL- FV 13-child SA₁₃-play-
ang- a
 ERR- FV
 ‘It is on the phone the teacher has made the children play at irregular intervals.’
- b. Mw-arimû a-gû-tem- **ang-** a tw-ana tû-ceth- **er-** a
 1-teacher SA₁-T-make- ERR- FV 13-child SA₁₃-play- APL- FV
 kî-eni-ni
 7-field-LC
 ‘The teacher at irregular intervals has made the children play in the field.’

In the BE auxiliary construction, the two suffixes can only occur in V as in (4) above. Switching of the two morphemes between BE and V is impossible, (7).

¹The vowel of the APPLICATIVE harmonizes with an immediately preceding vowel: it is -er (phonetically ϵ) when the preceding vowel is ϵ , or ɔ , and $\hat{i}r$, phonetically e otherwise. Furthermore when the APPLICATIVE ($\hat{i}r/er$) and the PERFECTIVE ($\hat{i}r$) co-occur two things happen (i) the vowel of the APPLICATIVE triggers harmony on the perfective suffix (ii) the r of the applicative deletes if the immediately preceding segment is consonant final. For example, if APPLICATIVE er which precedes perfective triggers harmony on the perfective $\hat{i}r$ causing it to change to er , the surface form is not $er-er$, but $e-er$. The same pattern holds for the other allomorph of the APPLICATIVE, $\hat{i}r$. If APPLICATIVE $\hat{i}r$ triggers harmony on the perfective changing it to $\hat{i}r$, the surface sequence of the two morphemes is not $\hat{i}r-\hat{i}r$, but $\hat{i}-\hat{i}r$. We know it is the applicative that is triggering harmony since if it was the perfect, we would expect the applicative to show up as $\hat{i}r$, which never is the case. The initial r of the APPLICATIVE does not delete when the applicative immediately precedes a vowel final segment. The fusion of the APPLICATIVE and PERFECTIVE above is subsumed under the term imbrication, following Bastin (1983).

- (7) a. *I-kî-eni-ni tw-ana tû-ka-îg- **îr-** u-a tû-gû-ceth- **ang-** a
 F-7-field-LC 13-child SA₁₃-FT-be- APL- VR-FV SA₁₃-T-play- ERR- FV
- b. *Tw-ana tû-ka-îg- **ang-** u-a tû-gû-ceth- **er-** a kî-eni-ni
 13-child SA₁₃-FT-be- ERR- VR-FV SA₁₃-T-play- APL- FV 7-field-LC

The TEMA causative also allows the two suffixes to appear on TEMA, the light V, (8). BE in the auxiliary construction does not allow these suffixes, (9).

- (8) I-thimû-ni mw-arimû a-tem- **ang-î-** îr-e tw-ana tû-ceth-a
 F-9.phone-LC 1-teacher SA₁-make-ERR- APL- PFV-FV 13-child SA₁₃-play-FV
 ‘It is while on the phone that the teacher at irregular intervals made the children play.’

- (9) *I-kî-eni-ni tw-ana tû-ka-îg- **ang-îr-** u-a tû-gû-ceth-a
 F-7-field-LC 13-child SA₁₃-FT-be- ERR- APL- VR-FV SA₁₃-T-play-FV

The fact that TEMA allows ERRATIC and APPLICATIVE to appear upstairs on TEMA light verb, or downstairs on V, while AUX only allows the two suffixes to appear downstairs on V suggests that TEMA causative is made up of two fseqs while AUX is made up of only one.

The 1 fseq versus 2 fseq conclusion is confirmed by the limitations on the TEMA construction. Upstairs on TEMA light verb, the two suffixes ERRATIC and APPLICATIVE must occur in a rigid order: TEMA-ERRATIC-APPLICATIVE, (cf. (8) vs. (10)).

- (10) *I-thimû-ni mw-arimû a-tem- **er- ang-** ir-e tw-ana tû-ceth-a
 F-9.phone-LC 1-teacher SA₁-make- APL- ERR- PFV-FV 13-child SA₁₃-play-FV

Similarly, if the two suffixes appear downstairs on V, they must respect the order Verb-ERRATIC-APPLICATIVE (cf. (5) and (11)).

- (11) *Mw-arimû a-gû-tem-a tw-ana tû-ceth- **er- ang-** a kî-eni-ni
 1-teacher SA₁-T-make-FV 13-child SA₁₃-play- APL- ERR- FV 7-field-LC

When one suffix is on TEMA and the other is on V, the order becomes free: TEMA-APPLICATIVE V-ERRATIC vs. TEMA-ERRATIC V-APPLICATIVE (cf. (6a) and (6b) above).

This is exactly what we expect if TEMA is bi-clausal, that is involves two fseqs. Within the fseq introduced by TEMA, the light verb, the order is rigid:

ERRATIC-APPLICATIVE. Within the fseq introduced by its V complement the order is also rigid: ERRATIC-APPLICATIVE. But across the two fseqs, the order is free: TEMA-APPLICATIVE V-ERRATIC vs. TEMA-ERRATIC V-APPLICATIVE. The differences between TEMA and BE follow from the fact that TEMA is bi-clausal (two fseqs) whereas BE is monoclausal (it involves only one fseq). This set of facts thus strongly suggests that BE constructions involve a single fseq, and hence further support that inside a single f-seq, HABITUAL SCOPES OVER PERFECT as demonstrated by the auxiliary construction.

Let us turn to another source of evidence that AUX is mono-clausal while TEMA is bi-clausal. This evidence is based on occurrence of the same morpheme twice with different interpretation. Consider first the ERRATIC morpheme when it occurs on a single verb. In addition to conveying that an event occurs at irregular intervals, (12a), the ERRATIC morpheme may also convey that an event occurs for a short time, (12b).

- (12) Tw-ana i-tû-ceth- **ang-** ir-e
 13-child F-SA₁₃-play- ERR- PFV-FV
 Literal: The children played erratically
- a. ✓The children played at 7.00 am, 7. 30 am, 7.45 am and 9.00 am.
- b. ✓The children played for a short time, e.g five minutes.

The ERRATIC morpheme can occur twice in the TEMA causative construction, one ERRATIC on the light verb and the other on V. Each of the erratic morphemes contributes a different nuance of the ERRATIC. Thus in (13), the ERRATIC on TEMA conveys the ‘within a short time’ reading, and the one on V the irregular reading. This shows that one ERRATIC is not a copy of the other.

- (13) Mw-arimû n-a-tem- **ang-** ir-e tw-ana tû-ceth- **ang-** a
 1-teacher F-SA₁-make- ERR- PFV-FV 13-child SA₁₃-play- ERR- FV
 ‘The teacher within a short time made the students play at irregular intervals.’

In contrast, there can only be one ERRATIC on AUX, which must occur on V. An ERRATIC on BE in the auxiliary construction results in ungrammaticality, (14).

- (14) *Tw-ana tû-ka-îg- **ang-** u-a tû-ceth- **ang-** îr-e
 13-child SA₁₃-FT-be- ERR- VR-FV SA₁₃-play- ERR- PFV-FV

Consider also the *APPLICATIVE* morpheme. In Kîtharaka as in other Bantu languages (see e.g. Marantz (1984), Baker (1988b), Mchombo (1993), Ngonyani (1996)), an *APPLICATIVE* can introduce an XP which indicates, among other things, the beneficiary of an event, (15a), or a location where an event is carried out, (15b).

- (15) a. John a-kû-bûr- **îr-** a tw-ana nguo
 1.John SA₁-T-wash- APL- FV 13-child 10.cloth
 ‘John has washed clothes for the children.’
- b. John a-kû-bûr- **îr-** a nguo ka-raî-ni
 1.John SA₁-T-wash- APL- FV 10.cloth 12-basin-LC
 ‘John has washed clothes in the basin.’

As with the *ERRATIC*, the *APPLICATIVE* can occur on the light verb, or the verb in complement position in *TEMA* causative, each of the applicatives introducing a different XP. In (16), the applicative on *TEMA* introduces a temporal adjunct (while on the phone), and the applicative on V a beneficiary (the children).

- (16) I-thimû-ni Maria a-tem- **er-** a John a-bur- **îr-** a
 F-9.phone-LC 1.Maria SA₁-make- APL- FV 1.John SA₁-wash- APL- FV
 tw-ana nguo
 13-child 10.cloth
 ‘It is on the phone that Maria has made John wash clothes for the children.’

On the other hand, the *BE* auxiliary construction does not allow simultaneous occurrence of *APPLICATIVE* on both *BE* and V, (17). The *APPLICATIVE* can only occur on V in *AUX*.

- (17) *I-ka-raî-ni Maria a-ka-îg- **îr-** u-a a-kû-bûr- **îr-** a
 F-12-basin-LC 1.Maria SA₁-FT-be- APL- VR-FV SA₁-T-wash- APL- FV
 tw-ana nguo
 13-child 10.cloth

The pattern above again is what we expect if *TEMA* involves two functional sequences and *AUX* one. Since there are two functional sequences on *TEMA* causatives, a different *ERRATIC* or *APPLICATIVE* can occur on either the high functional sequence (light verb) or the lower functional sequence (V in complement of *TEMA*). The *BE* auxiliary on the other hand is a single

functional. We therefore don't expect the auxiliary to be able to introduce a different ERRATIC OR APPLICATIVE.

Given the freedom on the occurrence of ERRATIC and APPLICATIVE on TEMA, we expect 15 combinations of the two suffixes all which are attested. Below we list only 9 of these combinations, combinations that involve the two morphemes ERRATIC and APPLICATIVE occurring in the TEMA construction simultaneously. The cases we ignore involve either APPLICATIVE OR ERRATIC occurring in the TEMA construction (not the two of them simultaneously). We ignore them because the two fseq nature of TEMA is better demonstrated when the two different suffixes co-occur. In the table below, we give the number of the example illustrating the combination at the end of the schema for each combination.

Possible combinations of ERRATIC and APPL on TEMA		
TEMA	V-ERR-APL	(5)
TEMA-APL	V-ERR	(6a)
TEMA-ERR	V-APL	(6b)
TEMA-ERR-APL	V	(8)
TEMA-APL	V-ERR-APL	(18a)
TEMA-ERR	V-ERR-APL	(18b)
TEMA-ERR-APL	V-APL	(19)
TEMA- ERR-APL	V-ERR	(20)
TEMA-ERR-APL	V-ERR-APL	(21)

- (18) a. I-thimû-ni mw-arimû a-tem- **er-** a tw-ana tû-ceth-
 F-9.phone-LC 1-teacher SA₁-make- APL- FV 13-child SA₁₃-play-
ang- îr- a kî-eni-ni
 ERR- APL- FV 7-field-LC
 'It is on the phone the teacher has made the children play at ir-
 regular intervals in the field.'

- b. Mw-arimû a-gû-tem- **ang-** a tw-ana tû-ceth- **ang- îr-**
 1-teacher SA₁-T-make- ERR- FV 13-child SA₁₃-play- ERR- APL-
 a kî-eni-ni
 FV 7-field-LC
 ‘The teacher within a short time has made the children play at
 irregular intervals in the filed.’

- (19) I-thimû-ni mw-arimû a-tem- **ang- îr-** a tw-ana tû-ceth-
 F-9.phone-LC 1-teacher SA₁₃-make-ERR- APL-FV cl₁₃-child SA₁₃-play-
er- a kî-eni-ni
 APL-FV 7-field-LC
 ‘It is while on the phone that the teacher within a short time has made
 the children play in the filed.’

- (20) I-thimû-ni mw-arimû a-tem- **ang- îr-** a tw-ana tû-ceth-
 F-9.phone-LC 1-teacher SA₁-make- ERR- APL-FV 13-child SA₁₃-play-
ang- a kî-eni-ni
 ERR- APL-FV 7-field-LC
 ‘It is while on the phone that the teacher within a short time has made
 the children play at irregular intervals.’

- (21) I-thimû-ni mw-arimû a-tem- **ang- îr-** a tw-ana tû-ceth-
 F-9.phone-LC 1-teacher SA₁-make- ERR- APL-FV 13-child SA₁₃-play-
ang- îr- a kî-eni-ni
 ERR- APL-FV 7-field-LC
 ‘It is while on the phone that the teacher within a short time has made
 the children play at irregular intervals in the filed.’

Note however that not all the combinations are possible. In particular, combinations that do not conform to rigidity within the fseq in that they have APPLICATIVE preceding ERRATIC are ruled out. These are illustrated below:

Impossible combinations of ERRATIC and APPL on TEMA

*TEMA-APL-ERR V (10)

TEMA V-APL-ERR (11)

The various combinations of morphemes within TEMA and its V therefore conform to the pattern we have seen before: within the fseq introduced by V, the ordering of the suffixes is rigid, within the fseq introduced by the light verb, the ordering is also rigid, but across fseqs, there is no rigidity.

Exactly the 9 combinations attested for the ERRATIC and APPLICATIVE morphemes are attested for the two morphemes that triggered this discussion: the HABITUAL and PERFECT. In TEMA constructions, they can occur upstairs, downstairs or both, with all the same freedoms and limitations. To test the various combinations, we have to keep in mind two complications. The first from chapter 1 is that HABITUAL and PERFECT cannot cooccur on the same verbal stem, (22a). To rescue this, a BE auxiliary needs to be introduced, (22b).

- (22) a. *?Maria n-a-thom- **ag-** **îit-** e barûa
₁.Maria F-SA₁-read- HAB- PFC- FV ₁₀.mail
 ‘Maria usually has read mail.’
- b. Maria n-a-îg- **ag-** u-a a-thom- **eet-** e barûa
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-read- PFC- FV ₁₀.mail
 ‘Maria usually has read mail.’

The second is that TEMA cannot take a bare verbal complement with the PERFECT morpheme, (23a). A BE auxiliary is inserted to rescue the derivation, (23b).

- (23) a. *?Maria a-gû-tem-a John a-thom- **eet-** e barûa
₁.Maria SA₁-T-make-FV ₁.John SA₁-read- PFC- FV ₁₀.letter
 ‘Maria has made John have read mail.’
- b. Maria a-gû-tem-a John a-îg-u-a a-thom- **eet-** e
₁.Maria SA₁-T-make-FV ₁.John SA₁-be-VR-FV SA₁-read- PFC- FV
 barûa
₁₀.letter
 ‘Maria has made John have read mail.’

With the two complications stated, we can go over the 9 combinations attested by the HABITUAL and PERFECT morphemes on the TEMA causative. AS with ERRATIC and APPLICATIVE, the two suffixes can occur downstairs in the complement of TEMA, (24).

- (24) Maria a-gû-tem-a John a-îg- **ag-** u-a a-thom- **eet-** e
₁.Maria SA₁-T-make-FV ₁.John SA₁-be- HAB- VR-FV SA₁-read- PFC- FV
 barûa
₁₀.letter
 ‘Maria has made John usually have read mail (e.g. before seven o’clock)’

HABITUAL and PERFECT can also switch positions on TEMA, the light verb, and the complement of TEMA, (25a), (25b).

- (25) a. Maria n-a-tem- **ag-** a John a-îg-u-a a-thom-
₁.Maria F-SA₁-make- HAB- FV ₁.John SA₁-be-VR-FV SA₁-read-
eet- e barûa
 PFC- FV ₁₀.letter
 ‘Maria usually makes John have read mail.’
- b. Maria n-a-tem- **eet-** a John a-thom- **ag-** a barûa
₁.Maria F-SA₁-make- PFC- FV ₁.John SA₁-read- HAB- FV ₁₀.letter
 ‘Maria has made John be reading mail.’

As with ERRATIC and APPLICATIVE, the HABITUAL and PERFECT can occur upstairs on TEMA.

- (26) Maria n-a-îg- **ag-** u-a a-tem- **eet-** e John a-thom-a
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-make- PFC- FV ₁.John SA₁-read-FV
 barûa
₁₀.mail
 ‘Maria usually has made John read mail.’

Note an important point with the ordering of HABITUAL and PERFECT on TEMA. When the two morphemes appear in the complement of TEMA, they conform to the order HABITUAL OVER PERFECT, (24). When they appear upstairs, they also conform to the order HABITUAL OVER PERFECT, (26). The order attested upstairs or downstairs on TEMA is the only order attested on the BE auxiliary construction, (22b). This is additional confirmation that TEMA is made up of two fseqs and AUX of only one. This is also further confirmation that HABITUAL SCOPES OVER PERFECT: HABITUAL SCOPES OVER the PERFECT on both the fseq introduced by the light verb, and the fseq introduced in the complement of the light verb. In fact the ordering HABITUAL OVER PERFECT conforms to

a wider cross-linguistic pattern where HABITUAL scopes over PERFECT (Cinque 1999:pg. 106). When one morpheme occurs on TEMA, and the other on V the ordering is free, (25). The ordering of suffixes is therefore free across fseqs (TEMA), and rigid in a single f-seq. Since AUX never allows this switching, then it is a mono-clausal situation, again confirming that in the auxiliary construction, HABITUAL is scoping over PERFECT within a single fseq.

Below we list 9 of the 15 orders attested in TEMA. These orders involve HABITUAL and PERFECT occurring simultaneously in the TEMA clause. We ignore orders where either HABITUAL OR PERFECT occurs in the TEMA clause at a time since the two fseq nature of TEMA is better demonstrated when the two different suffixes co-occur. In the table below the number of the example illustrating a particular combination is given after the schema showing the ordering.

Possible combinations of HAB and PERF on TEMA		
TEMA	BE-HAB V-PFC	(24)
TEMA-HAB	BE V-PFC	(25a)
TEMA-PFC	V- HAB	(25b)
BE-HAB TEM-PFC	V	(26)
TEMA-PFC	BE-HAB V-PFC	(27)
TEMA-HAB	BE-HAB V-PFC	(28)
BE-HAB TEMA-PFC	BE V-PFC	(29)
BE-HAB TEMA-PFC	V- HAB	(30)
BE-HAB TEMA-PFC	BE-HAB V-PFC	(31)

- (27) Maria n-a-tem- eet- e John a-îg- ag- u-a a-thom-
 1.Maria F-SA₁-make- PFC- FV 1.John SA₁-be- HAB- VR-FV 1.SA-read-
 eet- e barûa
 PFC- FV 10.letter
 ‘Maria has made John usually have read mail.’

- (28) Maria n-a-tem- **ag-** a John a-îg- **ag-** u-a a-thom-
₁.Maria F-SA₁-make- HAB- FV ₁.John SA₁-be- HAB- VR-FV SA₁-read-
eet- e barûa
PFC- FV ₁₀.letter
‘Maria usually makes John usually have read mail.’
- (29) Maria n-a-îg- **ag-** u-a a-tem- **eet-** e John a-îg- u-a
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-make- PFC- FV ₁.John SA₁-be- VR-FV
a-thom- **eet-** e barûa
SA₁-read- PFC- FV ₁₀.letter
‘Maria usually has made John have read mail.’
- (30) Maria n-a-îg- **ag-** u-a a-tem- **eet-** e John a-thom-
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-make- PFC- FV ₁.John 1.SA-read-
ag- a barûa
HAB- FV ₁₀.letter
‘Maria usually has made John be reading mail.’
- (31) Maria n-a-îg- **ag-** u-a a-tem- **eet-** e John a-îg- **ag-**
₁.Maria F-SA₁-be- HAB- VR-FV SA₁-make- PFC- FV ₁.John SA₁-be- HAB-
u-a a-thom- **eet-** e barûa
VR-FV SA₁-read- PFC- FV ₁₀.letter
‘Maria usually has made John usually have read mail.’

One might expect from the 9 of the 15 combinations above that everything goes. However orders that violate the fseq in having PERFECT OVER HABITUAL are ungrammatical. I illustrate with two cases. In the first case, PERFECT is higher than HABITUAL in the lower clause. In second situation, PERFECT is higher than HABITUAL in the higher clause.

Impossible combinations of HAB and PERF on TEMA

*TEMA BE-PFC V-HAB (32)

*BE-PFC TEMA-HAB V (33)

- (32) *Maria a-gû-tem-a John a-îg- **îît**- u-e a-thom- **ag**- a
₁.Maria SA₁-T-make-FV ₁.John SA₁-be- PFC- VR-FV SA₁-read- HAB- FV
 barûa
₁₀.letter
- (33) *Maria n-a-îg- **îît**- u-e a-tem- **ag**- a John a-thom- a
₁.Maria F-SA₁-be- PFC- VR-FV SA₁-make- HAB- FV ₁.John SA₁-read- FV
 barûa
₁₀.letter

This data again confirm that within a single fseq, the morphemes have to be ordered in a rigid manner. Crucially, the data confirm that within an fseq, HABITUAL must merge above PERFECT. HABITUAL therefore is higher in the clausal structure than PERFECT.

We can now generalise this point: in TEMA constructions, the 4 morphemes ERRATIC, APPLICATIVE, HABITUAL and PERFECT, can freely occur downstairs or upstairs. We have demonstrated this point in the examples where the two morpheme switch positions in the upper or lower clause in TEMA causative construction (cf. (6) for the ERRATIC and APPLICATIVE and (25) for HABITUAL and PERFECT). Each of the four morphemes can also freely occur twice, once upstairs, once downstairs. We have demonstrated this for the ERRATIC and the APPLICATIVE (cf. (13) and (16)) and we can reproduce examples for the HABITUAL and PERFECT, (34), (35).

- (34) Mw-arimû n-a-tem- **ag**- a tw-ana tû-ceth- **ag**- a
₁-teacher F-SA₁-make- HAB- FV ₁₃-child SA₁₃.SA-play- HAB- FV
 ‘The teacher usually makes the children play repeatedly.’
- (35) Ndogita n-a-tem- **eet**- e a-ajie ba-îg-u-a ba-mer-
₁.doctor F-SA₁-make- PFC- FV ₁-patient SA₂-be-VR-FV SA₂-swallow-
îît- i-e ndawa
 PFC- IC-FV ₁₀.medicine
 ‘The doctor has made the patients have taken medicine.’

A total of the four morphemes can occur on the lower clause, (36), or on the higher clause, (37).

- (36) Mw-ekûrû a-gû-tem-a mîndi a-îg- **ag-** u-a a-bûûr-
 1-woman SA₁-T-make-FV 1.house help SA₁-be-HAB-VR-FV SA₁-wash-
ang-îr-îît- e tw-ana nguo
 ERR- APL- PFC- FV 13-child 10.cloth
 ‘The woman has made the house help have washed the clothes for
 the children within a short time.’
- (37) I-kîrugîro mw-ekûrû a-îg- **ag-** u-a a-tem- **ang-îr-îît-**
 F-kitchen 1-woman SA₁-be-HAB-VR-FV SA₁-make-ERR- APL- PFC-
 e mîndi a-bûûr-a nguo
 FV 1.house help SA₁-wash-FV 10.cloth
 ‘It is in the kitchen that the woman usually at irregular intervals has
 made the house help wash clothes.’

Four morphemes on the lower clause can co-occur with four morphemes on the upper clause, (38).

- (38) I-kîrugîro mw-ekûrû a-îg- **ag-** u-a a-tem- **ang-îr-îît-**
 F-kitchen 1-woman SA₁-be-HAB-VR-FV SA₁-make-ERR- APL- PFC-
 e mîndi a-îg- **ag-** u-a a-bûûr- **ang-îr-îît-** e
 FV 1.house help SA₁-be-HAB-VR-FV SA₁-wash-ERR- APL- PFC- FV
 tw-ana nguo
 13-child 10.cloth
 ‘It is in the kitchen that the woman usually at irregular intervals has
 made the house help wash clothes for the children within a short
 time.’

All the other numerous combinations of the four morphemes are possible on TEMA, as long they observe the rigid ordering of morphemes with an fseq: within the higher fseq, the ordering of the morphemes will be rigid: BE-HABITUAL V-ERRATIC-APPLICATIVE-PERFECT, (37). The same ordering must be observed within the lower fseq, (36). Any sub-set of the four morphemes on the lower or the higher verb, will always produce a grammatical sentence on the TEMA causative as long as rigidity within an fseq is observed.

In sharp contrast, the BE construction allows only one order of the four morphemes: BE-HABITUAL V-ERRATIC-APPLICATIVE-PERFECT.

- (39) Maria n-a-îg- ag- u-a a-thom- ang- îr- eet- e barûa
 1.Maria F-SA₁-be- HAB- VR-FV SA₁-read- ERR- APL- PFC- FV 10.mail
 metha-ni
 9.table-LC
 ‘Maria usually has read mail at irregular intervals on the table.’

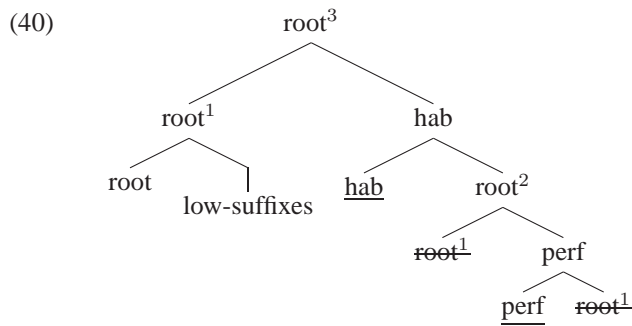
The numerous combinations of the four suffixes on TEMA in contrast to only one combination in AUX is further confirmation that the BE auxiliary construction is mono-clausal: In a bi-clausal context, there are several options for a morpheme; in mono-clausal AUX, the options are severely limited. The construction with the four morphemes again shows HABITUAL is higher than PERFECT. Within the lower fseq, HABITUAL appear on an AUX that precedes V hosting PERFECT, (36). Within the higher fseq, HABITUAL occurs on AUX which precedes the light V hosting PERFECT, (37). The HABITUAL therefore always scopes OVER PERFECT within an fseq.

Summarizing, we have provided evidence in this section that the BE auxiliary construction is mono-clausal and therefore is relevant for determining the hierarchy of heads in a single functional sequence. By confirming the mono-clausal status of BE, we have confirmed that HABITUAL is higher than PERFECT since HABITUAL occurs on BE and PERFECT on V. As we will see shortly this confirmation of the scope of HABITUAL OVER PERFECT is going to have important consequences for the analysis of morphemes linearly between HABITUAL and PERFECT and morphemes linearly following PERFECT. Let us first consider the consequences for the morphemes between HABITUAL and PERFECT.

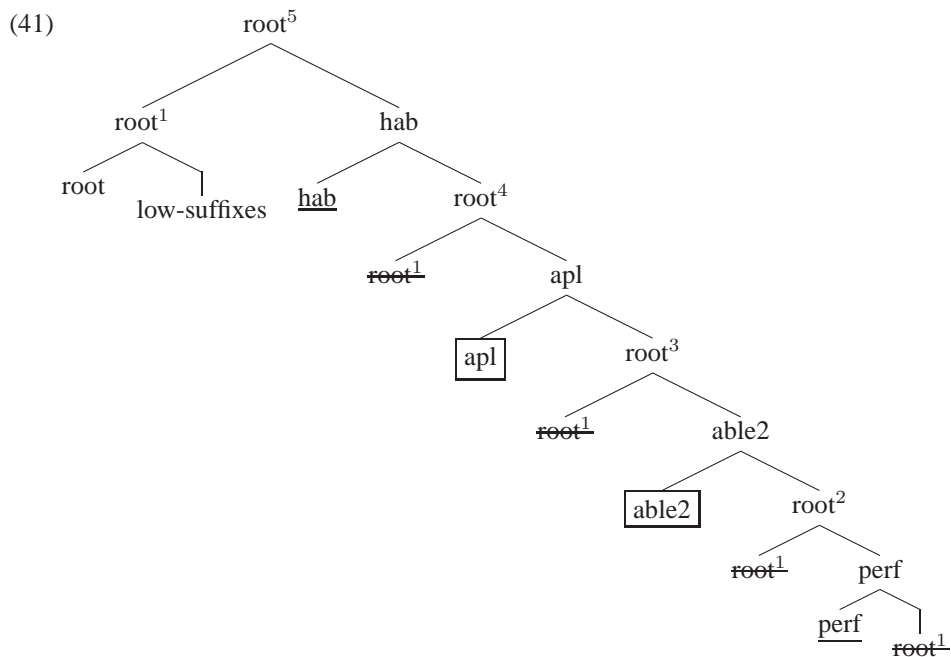
2.3 Between habitual and perfect

Two morphemes are sandwiched between HABITUAL and PERFECT: APPLICATIVE and ABLE2. These morphemes come in the linear order APPLICATIVE-ABLE2. ABLE2 is a double of the ABLE we encountered in chapter 1 (more details below).

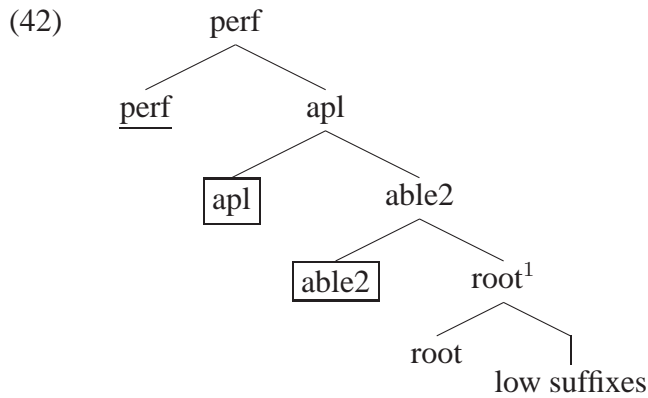
We saw in chapter 1, and we have confirmed in this chapter that HABITUAL is higher than PERFECT. Since transitivity using the applicative showed HABITUAL is closer to the root than PERFECT (see below for more details), we concluded that in order to get the word order right from (i) a base where the HABITUAL scopes OVER PERFECT (ii) a theory where movement targets the root or a constituent containing the root, the root+suffixes lower than PERFECT must move past PERFECT and HABITUAL cyclically (i.e. without pied-piping the PERFECT). This sub-part of the derivation is repeated in (40).



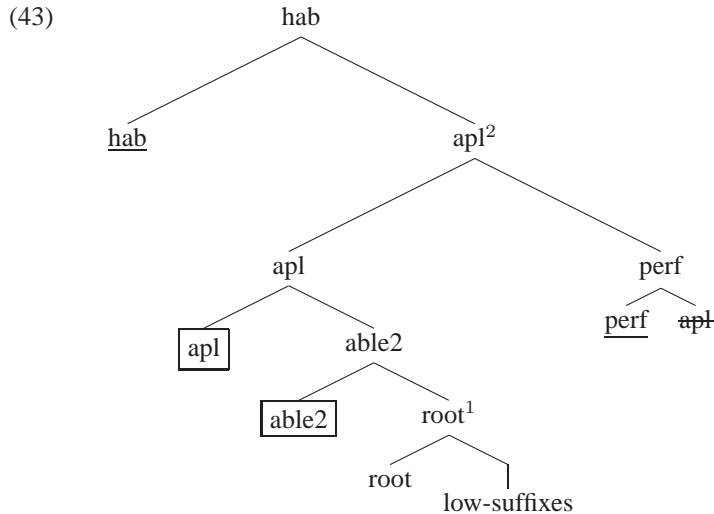
The analysis of the HABITUAL and PERFECT in (40) has important consequence for the analysis of the two morphemes between HABITUAL and PERFECT - APPLICATIVE and ABLE2. Given the theory where movement targets the root or a constituent containing the root, there are at least three merge options for APPLICATIVE and ABLE2 that will result in their being linearized correctly between HABITUAL and PERFECT. One, the two morphemes could be base-generated between HABITUAL and PERFECT in the hierarchical order APPLICATIVE OVER ABLE2. The right surface order would then arise from the root+lower suffixes moving past the four morphemes cyclically without pied-piping any of the four morphemes, (41).



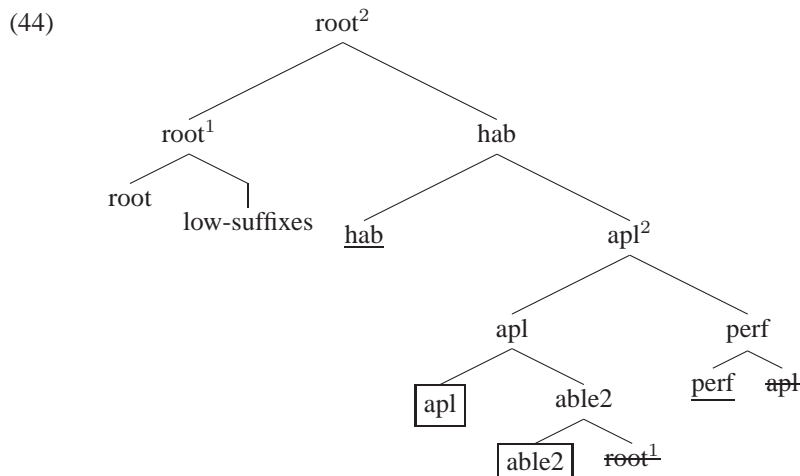
The two morphemes could also be base-generated immediately below PERFECT in the base order APPLICATIVE OVER ABLE2, (42).



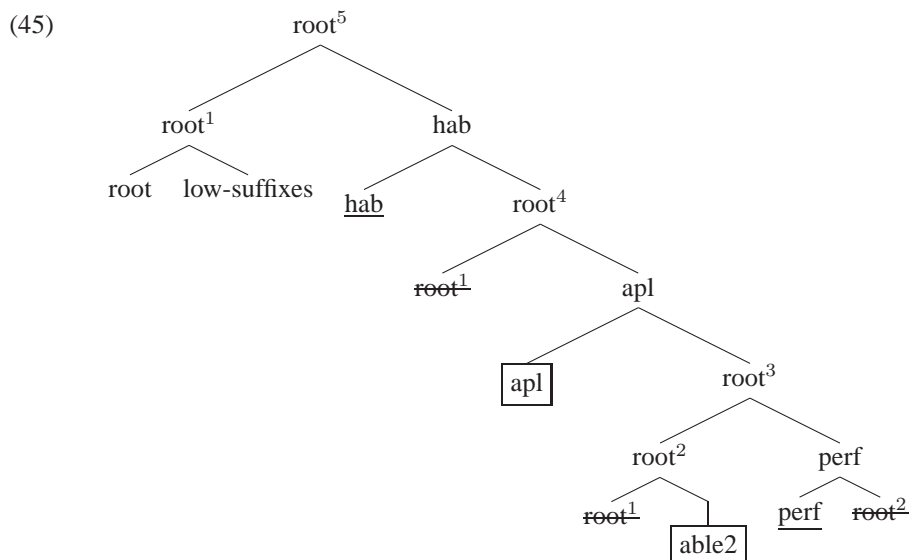
The correct surface order would then arise as follows. First the root and low suffixes in the complement of ABLE2 would pied-pipe both APPLICATIVE and ABLE2 to the position between HABITUAL and PERFECT, (43). (There is an option where the root and lower suffixes first cycles across ABLE2 and APPLICATIVE and then pied-pipes APPLICATIVE and ABLE2 to the position between HABITUAL and PERFECT. I do not consider this option as it yields the same result as the option when the root does pied-piping while in complement position.)



Second, root¹ containing just the root+low-suffixes is sub-extracted and moved past HABITUAL. This gives the desired surface order: root-low suffixes-HABITUAL-APPLICATIVE-ABLE2-PERFECT, (44).

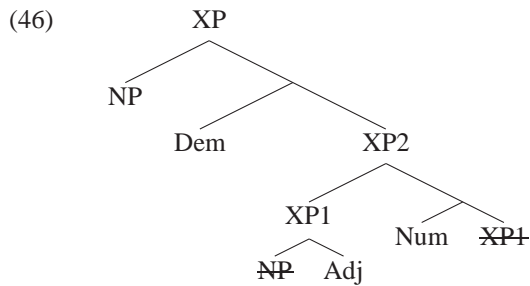


There is a third alternative that will also give the right order. Either APPLICATIVE or ABLE2 can be base-generated immediately below PERFECT and the other morpheme between HABITUAL and PERFECT. Let us illustrate the option where ABLE2 merges below PERFECT and APPLICATIVE between HABITUAL and PERFECT. To get the surface order, the root+low suffixes may pied-pipe ABLE2 while in the complement, or in the specifier position of ABLE2. Then the root+low suffixes would strand ABLE2 below PERFECT and move to the position above HABITUAL. Let us illustrate in (45), the case where the root+low suffixes first moves to the Spec of ABLE2 pied-piping ABLE2 as a specifier. This again will give the desired order: root–low suffixes–HABITUAL–APPLICATIVE–ABLE2–PERFECT.



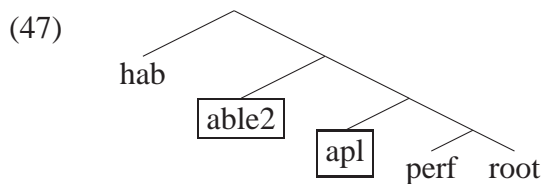
The last two derivations involving stranding of morphemes between HA-

HABITUAL and PERFECT would resemble the derivation of the order N Dem Adj Num in the NP, which Cinque takes to be rare, perhaps spurious (see however Abels and Neeleman (2006), Abels and Neeleman (2007), for more discussion of this word order in the NP, and for the conclusion that the order is not spurious). This order exists as the unmarked order in Pitjantjatjara, Bowe (1990), Eckert and Hudson (1988), and Nkore-Kiga, Taylor (1985), and as an alternative order in Noni, Hyman (1981), and Kĩ̃tharaka. Consider now how this order would derive from the order which Cinque takes to be the base order in the noun phrase: Dem Num Adj N. The noun will have to strand the adjective between Dem and Num in the course of the derivation. This is illustrated in (46). (Here I have illustrated the derivation where before stranding, the noun drags the Adj after moving to a position above the adjective. There is another possibility where the noun drags the Adj when in the complement position of the adjective (cf. Cinque (2005).)



This is similar to our stranding derivation for APPLICATIVE and ABLE2 above.

Let us turn now to structures that will not derive the surface order given the restrictive theory of moving the root or a constituent containing the root. There are several such cases, and we will only discuss a few of them. For example, the two morphemes could not be base-generated between HABITUAL and the PERFECT in the hierarchy ABLE2 OVER APPLICATIVE, (47).

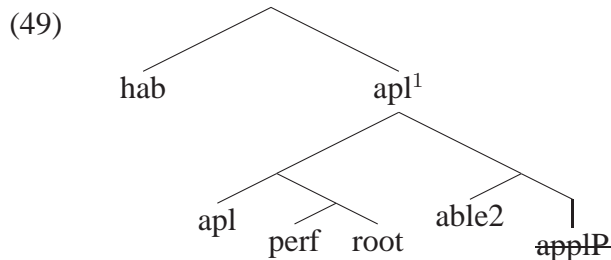


If the root moves cyclically past the four morphemes, this results in the wrong surface order, (48a). The right surface order is as in (48b). (The position of APPLICATIVE and ABLE2 would be switched if the root moved all the way up cyclically).

- (48) a. *root < HABITUAL < ABLE2 < APPLICATIVE < PERFECT

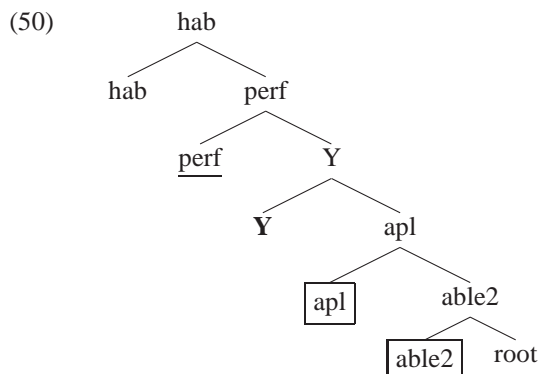
- b. \checkmark root \prec HABITUAL \prec APPLICATIVE \prec ABLE2 \prec PERFECT

To get the right surface order given the structure in (47), we want a scenario where the root can strand the APPLICATIVE above ABLE2 and at the same time ensure that PERFECT follows all the four morphemes. No derivation will achieve this because any subtree containing the APPLICATIVE will also contain the PERFECT. To illustrate just one impossible scenario, consider a case where the root in the complement of PERFECT pied-pipes the constituent immediately dominating APPLICATIVE between HABITUAL and ABLE2, (49).



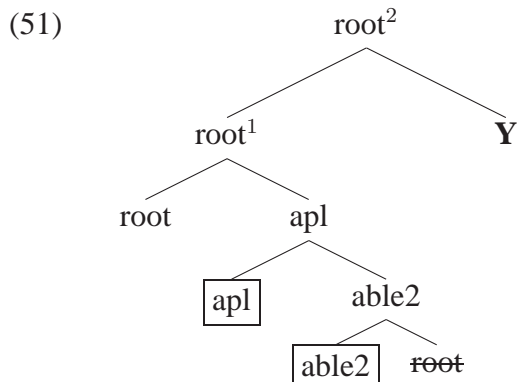
We can strand APPLICATIVE in the structure in (49) but the PERFECT will be in the wrong position - it has to follow all the four suffixes and there is no derivation that will achieve this.

Another alternative that cannot generate the proper surface string is merging the two morphemes below PERFECT but below a suffix that will end up closer to the root than APPLICATIVE and ABLE2. To illustrate this, consider the scenario where some suffix Y intervenes between PERFECT on the one hand, and APPLICATIVE and ABLE2 on the other, as in (50).

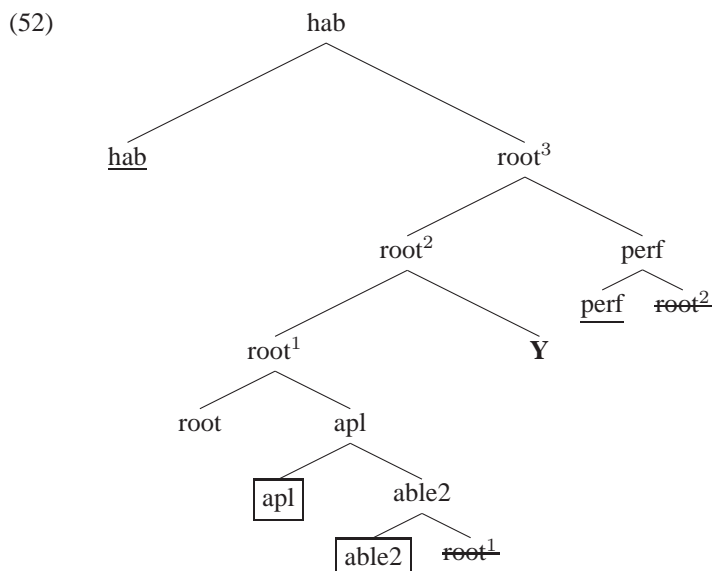


With this structure, it is impossible to linearize APPLICATIVE and ABLE2 between HABITUAL and PERFECT. Consider first a derivation where the root first moves past ABLE2 and APPLICATIVE creating the order root-APPLICATIVE-ABLE2, and then root-APPLICATIVE-ABLE2 moves past Y creating the order root-APL-ABLE2-Y, as shown in (51). (We have ignored the intermediate landing site

of the root between ABLE2 and the APPLICATIVE.)



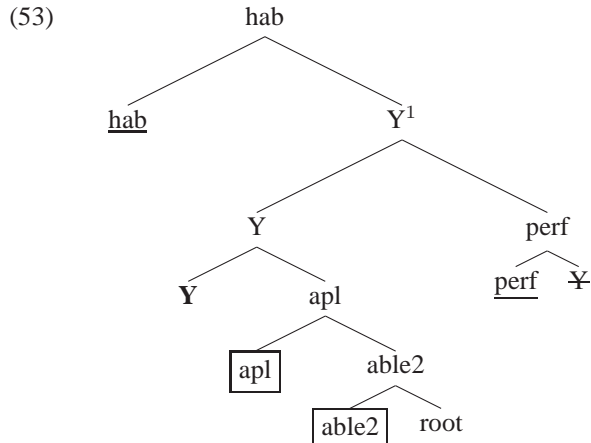
We can then merge HABITUAL and PERFECT on top of the tree in (51), and then move the whole subtree in (51) to a position between HABITUAL and PERFECT, as shown in (52).



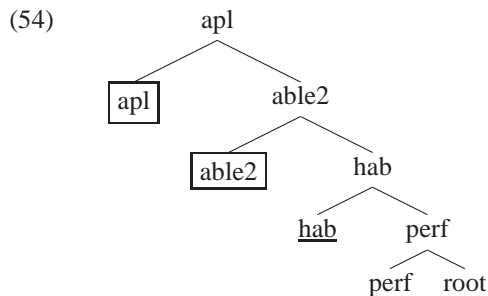
Given the syntax in (52), it is not possible for the root to strand APPLICATIVE and ABLE2 between HABITUAL and PERFECT and move to precede the HABITUAL without also stranding Y: there is no constituent that contains root and Y, at the exclusion of APPLICATIVE and ABLE2. We will never reach a stage of the derivation where the root+Y precedes HABITUAL. The problematic stage of the derivation is shown in (52): root and Y are not a constituent.

The same problematic stage of the derivation arises if the root in the complement of ABLE2 pied-pipes the whole constituent containing Y to the position between HABITUAL and PERFECT, (53): there is no way for root and Y to

re-unite and move above HABITUAL since they do not form a constituent that excludes APPLICATIVE and ABLE2.



There is a third option that will not result in the right surface string: base-generating both APPLICATIVE and ABLE2 above HABITUAL. Let us consider the option where APPLICATIVE and ABLE2 merge above the HABITUAL in the order APPLICATIVE OVER ABLE2, (54).



No derivation observing the requirement that only the root or part containing the root moves can lead to the right surface order. Let us illustrate with a few derivations. If the root moves cyclically all through without pied-piping any morpheme we get a wrong surface order, (55a). The right surface order is (55b).

- (55)
- a. *root < APPLICATIVE < ABLE2 < HABITUAL < PERFECT.
 - b. ✓ root < HABITUAL < APPLICATIVE < ABLE2 < PERFECT

If the root first moves past HABITUAL and PERFECT cyclically (in a non-roll up fashion), there is still no way to strand PERFECT behind and allow the root+HABITUAL to move to the top: there is no subtree made up of only the root and HABITUAL at the exclusion of PERFECT. If the root moves past PERFECT,

and then the root-PERFECT moves past HABITUAL (roll up movement) we create a constituent with root-PERFECT. This can strand HABITUAL, but we don't want HABITUAL down, we want it all the way at the top. What we want is a scenario where we can strand PERFECT down, and move with the HABITUAL, but the theory will not allow this. All the options therefore fail to generate the surface order from the base in (55).

Let us make a summary of what our theory expects so far concerning the merge of the two morphemes appearing linearly between HABITUAL and PERFECT - APPLICATIVE and ABLE2. There are three options that will yield the correct result. The two morphemes can merge between HABITUAL and PERFECT in the order APPLICATIVE > ABLE2. The two morphemes can also merge below PERFECT as long as there is no suffix Y merged immediately below the PERFECT that will end closer to the root than the HABITUAL, APPLICATIVE and ABLE. Either the APPLICATIVE or ABLE2 can merge below PERFECT and the other morpheme between the HABITUAL and the PERFECT as long as there is no suffix Y merged immediately below the PERFECT that will end closer to the root than the HABITUAL and the suffix which merges below the PERFECT (APPLICATIVE or ABLE2).

So which of these alternatives work? Let us turn to the facts and establish the derivation for the APPLICATIVE and ABLE2.

Consider first the APPLICATIVE. (56) shows that the APPLICATIVE follows the HABITUAL and (57) that the APPLICATIVE precedes the PERFECT: HABITUAL-APPLICATIVE-PERFECT.

(56) Maria a-makan- **ag-** **îr-** i-a kû-ajua
₁.Maria SA₁-scare- HAB- APL- IC-FV ₁₅-sickness
 'Maria usually gets scared because of sickness.'

(57) Maria a-makan- **îr-** **îît-** i-e kû-ajua
₁.Maria SA₁-scare- APL- PFC- IC-FV ₁₅-sick
 'Maria is scared because of sickness.'

Let us turn to the scopes with the APPLICATIVE in order to establish its height in the hierarchy of the clause. We will consider the scopes between the HABITUAL and the APPLICATIVE when it introduces a phrase of the reason type, since this is the scope that is a bit easy to establish. We expect two readings depending on the order of merge of the two morphemes. If the APPLICATIVE, merges before HABITUAL we expect a reading where a causing event occurs habitually since the HABITUAL will scope over the APPLICATIVE, (58a). On the other hand, if the APPLICATIVE merges after the HABITUAL, we expect a reading

where a specific reason causes an habit, (58b).

- (58) a. A causing event occurs habitually
 b. A specific reason causes some habit

In this light, consider the example in (56): Maria usually gets scared because of sickness. If *HABITUAL* scopes over the reason argument, we expect a reading where the cause for getting scared is repeated: whenever Maria is sick, she gets scared. On the other hand, if the reason argument is above the *HABITUAL*, we expect a reading where one event of causation leads to an habit: Maria once was sick with malaria, and she has been scared since then. The latter reading is impossible. Only the reading where causation is repeated is possible. This means that the reason argument scopes below *HABITUAL*. Since the reason argument is introduced by an applicative morpheme, we can also conclude that the applicative morpheme merges below the *HABITUAL*.

The above fact that the *APPLICATIVE* scopes below *HABITUAL* is surprising given that *APPLICATIVE* appears further from the root than the *HABITUAL*. This is unexpected under the mirror principle. Note however, this is the result predicted by our theoretical choice. If the *HABITUAL* scopes over *PERFECT*, and the *APPLICATIVE* occurs linearly between *HABITUAL* and *PERFECT*, then the *APPLICATIVE* must merge lower than *HABITUAL*. The structure would otherwise be impossible to linearize, if movement is leftwards, and if movement targets a subtree containing the verb.

There is actually additional independent evidence for the low position of the *APPLICATIVE* with respect to the *HABITUAL* based on word order facts: in the BE auxiliary construction, a mono-clausal context, *HABITUAL* occurs on BE, and *APPLICATIVE* on the V, whether it introduces a benefactive (the children), a reason (hunger) or a locative phrase (in the kitchen), (59).

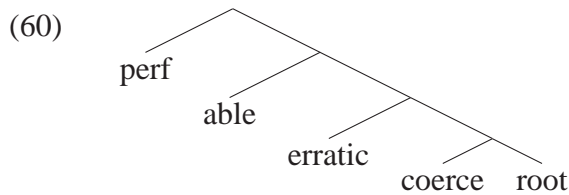
- (59) Maria a-ig- ag- u-a a-rug- î- îr-e {tw-ana | j-ûûra
₁.Maria SA₁-be-HAB- VR-FV SA₁-cook- APL- PFV-FV {₁₃-child | ₅-hunger
 | kî-rugîro }
 | ₇-kitchen }
 ‘Maria usually has cooked for children/ because of hunger/ in the kitchen.’

Given our argumentation in chapter 1, that both verbs and suffixes merge in some hierarchy, and that suffixes are attractors that attract the closest verbal element, then the *HABITUAL* must merge above *AUX* while *APPLICATIVE* and *PERFECT* merge above *V*. *HABITUAL* then attracts *AUX*, and the *APPLICATIVE* and

the PERFECT attract V.

We have an important argument therefore that the APPLICATIVE is not higher than HABITUAL: it scopes below HABITUAL and it occurs on V in the auxiliary construction. To complete the argumentation that the applicative is part of the habitual-perfect zone, we need to show the APPLICATIVE is not so low in the clausal hierarchy. By a zone, we mean a group of suffixes where a sub-tree containing the root moves in a systematic style of movement: either cyclic Spec-to-Spec movement, or cyclic roll-up movement. Thus ABLE and ERRATIC form a zone because a subtree containing the root moves past these two morpheme Spec-to-Spec (without pied-piping the ERRATIC). HABITUAL and PERFECT also form a zone because a subtree containing the root moves past these two suffixes Spec-to-Spec in a non roll-up manner.

To show that the APPLICATIVE is part of the habitual-perfect zone, we need to show that it scopes above the morphemes below PERFECT. Let us remind ourselves about the facts from chapter 1. We saw in this chapter that there are three morphemes below PERFECT: COERCE, ERRATIC and ABLE, and these merge in the hierarchy in (60).



In order to show satisfactorily that APPLICATIVE is part of the habitual-perfect zone, one would need to show that the APPLICATIVE scopes over all these morphemes.

Let us examine at least one of the scopes that is easy to establish - that between the APPLICATIVE and COERCE. At first sight, the data seem to be neutral. The APPLICATIVE may scope above COERCE. Thus in (61), the argument introduced by the applicative 'on the phone' indicates the time of causation.

- (61) Ndagîtarî a-kû-mer- **ith-** **îr-** i-a mû-ajie ndawa
 1.doctor SA₁-T-swallow- CRC- APL- IC-FV 1-patient 10.medicine
 thimû-ni
 9.phone-LC
 'The doctor while on the phone has coerced the patient to take medicine.'

The applicative may also introduce an argument that indicates the location of the coerced event, (62).

- (62) Mw-ekûrû a-thamb- **ith-** î- îr-i-e mîndi mw-ana
 1-woman SA₁-wash- CRC- APL- PFV-IC-FV 1.house help 1-child
 ka-raî-ni ka-nini
 12-basin-LC 12-small
 ‘The woman coerced the house help to wash the child in a small basin.’

We therefore have a scope ambiguity between the *APPLICATIVE* and the *COERCE*.

How could one argue that the *APPLICATIVE* is part of the habitual-perfect zone in the face of this ambiguity?² Let us first explore how one could go about accounting for this ambiguity. There is at least one promising approach: assuming that either of the two morphemes has two positions within an fseq. Thus *COERCE* could be in two positions in the clausal hierarchy, (63a), or *APPLICATIVE* could be in two positions in the clausal hierarchy, (63b).

- (63) a. *COERCE* > *APPLICATIVE* > *COERCE*
 b. *APPLICATIVE* > *COERCE* > *APPLICATIVE*

Suppose it is *coerce* that has two positions in the hierarchy of the clause. And suppose we merge the other manifestation of *COERCE* above *HABITUAL*, so that it can scope over *APPLICATIVE*. Then we would expect *COERCE* to scope over the other morphemes between the highest and lowest *COERCE*, for example *ABLE* and *ERRATIC*. This kind of scope is however impossible. We saw in chapter 1 that *ABLE* must scope over *COERCE*, (64).

- (64) Maria n-a-ûrag- **ith-** **îk-** ir-e mbûri
 1.Maria F-SA₁-kill- CRC- ABL- PFV-FV 9.goat
 a. *Maria coerced the goat to be easy to kill. (by tying its legs together)
 b. ✓ Maria was easy to coerce to kill the goat.

We also saw that *ERRATIC*, on the irregular reading on an event always scopes over *COERCE*, (65).

²Other Bantu languages show the type of ambiguity exhibited in Kîtharaka. Thus although the applicative follows the causative in Chichewa (Hyman (2003b)) and Chimwi:ini (Abasheikh (1978)), the applicative can license a PP indicating the location of the caused event, or an instrument PP signaling the means of causation. A single applicative therefore shows low and high scope with respect to the causative, or alternatively, a single causative shows low or high scope with respect to the applicative.

- (65) Nasi n-a-nyu- *ith-* ang- ir-i-e tû-ana ndawa
 1.nurse F-SA₁-drink- CRC- ERR- PFV-IC-FV 13-child 10.medicine
- a. ✓ At 7am, 7.50 am, 9.00 am, 11. am, the nurse coerced the children to take medicine, and they finally took the medicine.
- b. *Once, the nurse coerced the children to take medicine at 7.00 am, 7.50 am, 9.00 am, 11. am.

These facts on the scope of ABLE and ERRATIC over COERCE would be mysterious if COERCE had two positions in an fseq: one immediately below ERRATIC, and another above HABITUAL.

Let us turn to the option where it is the APPLICATIVE that has two positions in the hierarchy of the clause, one below and the other above COERCE. This approach does not face the scope problem faced with assuming that there are two positions for COERCE. The scope over the coerced event is because the applicative has a position below COERCE, and the scope over the coercing event is because there is a position for the APPLICATIVE above COERCE, which is immediately below the HABITUAL. There is also morphological evidence that the APPLICATIVE has two positions in fseq: the applicative can double. Since contexts that trigger doubling are complicated, we will not introduce the doubling facts here (see chapter 6 for details). We will take it therefore that it is APPLICATIVE that has two positions in the clause, not COERCE.

The presence of the two positions for the applicative in the clausal hierarchy complicates things a bit in that whenever there is a scopal effect, we need some way to tell whether it is due to the low or the high applicative, to use the terminology of Pylkkanen (2002). We will see below that passivization with the eventive passive enables us to establish that at least the applicative that introduces reasons merges higher than the passive.³ The facts are therefore consistent with the APPLICATIVE merging between HABITUAL and PERFECT.

Let us turn to the second morpheme that appears between HABITUAL and PERFECT: ABLE2. ABLE2 is a double of ABLE (non-doubling) (cf. chapter 1). Thus whenever ABLE2 occurs, ABLE (the non-doubling) must also occur.

ABLE2 follows APPLICATIVE, (66), but precedes PERFECT, (67): APPLICATIVE-ABLE2-PERFECT.

- (66) Mu-uro û-ring- *îk-* ag- *îr-* *îk-* a ndagaca-ni
 3-river SA₃-CROSS- ABL- HAB- APL- ABL- FV 9.bridge-LC
 ‘The river is usually easy to cross on the bridge.’

³We cannot test scopes between ABLE and the APPLICATIVE in sentences with reason applicatives because such sentences for some unknown reason cannot be passivized with ABLE.

- (67) Mu-uro n-û-ring- **îk-** ang- **îk-** **îît-** e
 3-river F-SA₃-cross- ABL- ERR- ABL- PFC- FV
 ‘The river was easy to cross at irregular intervals.’

ABLE2 is inert for semantic scope. Thus there is no noticeable semantic difference between a sentence with ABLE and ERRATIC, (68), and with two ABLE, and ERRATIC, (69). In both cases, ABLE SCOPES OVER ERRATIC since what is irregular is the event, not the “easiness” introduced by ABLE.

- (68) Mû-ûro n-û-ring- **îk-** *ang-* ir-e
 3-river F-SA₃-cross- ABL- ERR- PFV-FV
- ✓ The river was easy to cross at 7.00 am, 7.30 am, 7.45 am - the river was not flooded, so I could always walk across.
 - *Only at 7.00 am, 7.30 am, 7.45 am 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.

- (69) Mû-ûro n-û-ring- **îk-** *ang-* **îk-** ir-e
 3-river F-SA₃-cross- ABL- ERR- ABL- PFV-FV
- ✓ The river was easy to cross at 7.00 am, 7.30 am, 7.45 am - the river was not flooded, so I could always walk across.
 - *Only at 7.00 am, 7.30 am, 7.45 am 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.

Semantic scopes will therefore not tell us about the relative height of the ABLE2. There is however confirmation from word order facts that ABLE2 is lower than HABITUAL. In the BE auxiliary construction, HABITUAL occurs on BE, and ABLE2 on V, (70).

- (70) Mu-uro n-û-ig- **ag-** u-a û-ring- **îk-** ang- **îk-** ir-e
 3-river F-SA₃-be- HAB- VR-FV SA₃-cross- ABL- ERR- ABL- PFV-FV
 ‘The river usually has been easy to cross many times.’

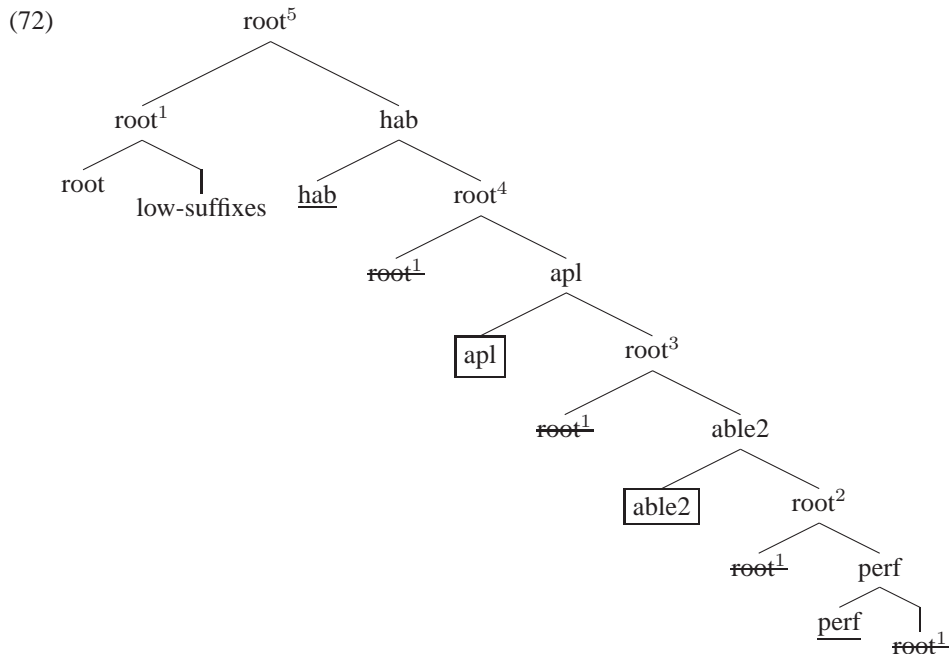
This means that HABITUAL is higher than ABLE2. Note that this is what is expected given our theoretical machinery: If HABITUAL SCOPES OVER PERFECT, and

ABLE2 appears between HABITUAL and PERFECT, then ABLE2 must merge below HABITUAL. The structure would be impossible to linearize if the merge situation was otherwise.

To summarize, there is no serious impediment so far against integrating APPLICATIVE and ABLE2 into the habitual-perfect zone: the theory favours this integration, and the empirical facts, when they can be established, go in this direction.

(71) HABITUAL > APPLICATIVE > ABL2 > PERFECT

The right derivation for integrating APPLICATIVE and ABLE2 is therefore the cyclic derivation. We show this in (72).

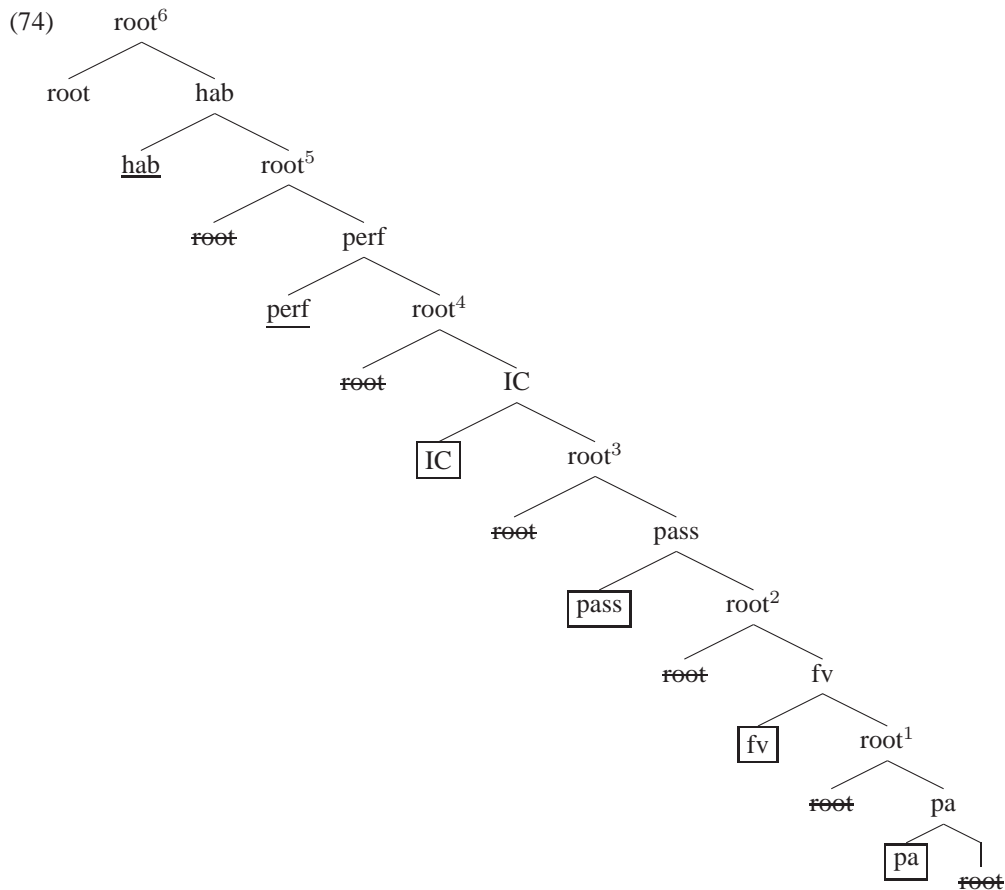


2.4 After perfect

After PERFECT there are four suffixes. These suffixes come in the order INNER CAUSATIVE-PASSIVE-FINAL VOWEL-PLURAL ADDRESSEE, as shown in (73).

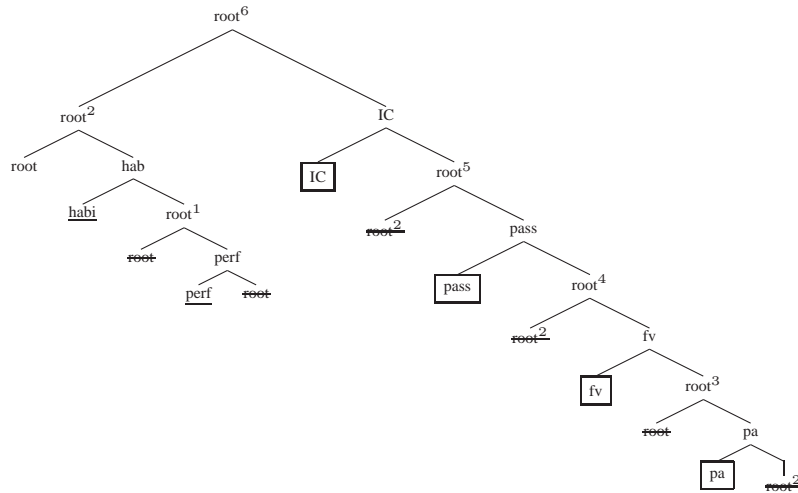
(73) Tw-ana i-tû-ûk- iir- j- w- e- ni
 13-child F-SA₁₃-wake up- PFV- IC- PAS- FV- PA
 ‘The children were woken up you guys.’

Given that these morphemes immediately follow PERFECT, the lowest member so far of the highest cyclic zone, there are at least three logical options on the merge of these four suffixes. First the four morphemes could merge immediately below PERFECT continuing the highest cyclic zone: the habitual-perfect zone. To derive the surface order, the root would move past an expanded habitual-perfect zone, in a cyclic manner (without pied-piping any of the morphemes of the habitual-perfect zone). This derivation is illustrated in (74), with the morphemes between HABITUAL and PERFECT ignored.



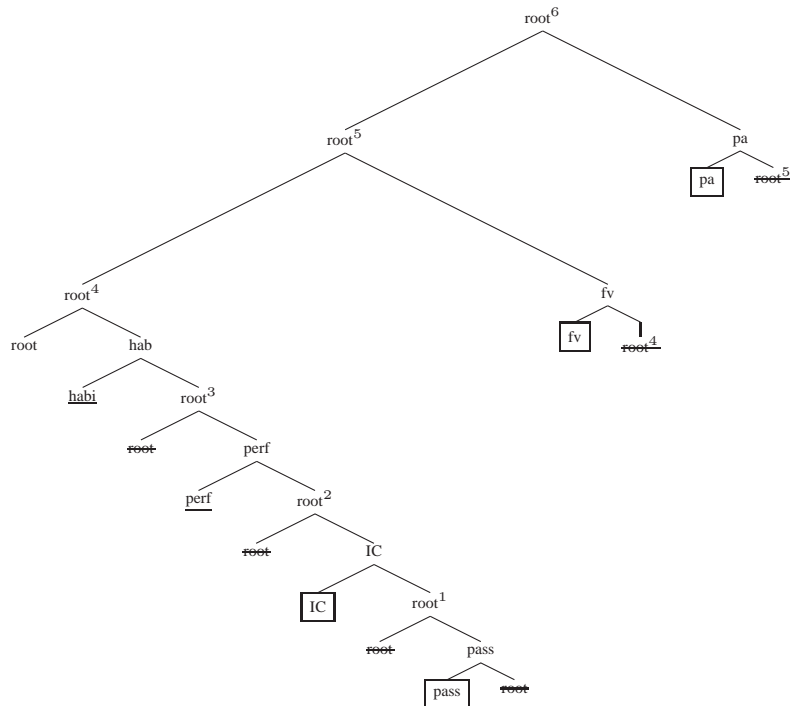
Second, the four morphemes could merge above HABITUAL in their left to right scopal order, or in the mirror order. Let us consider the non-mirror structure. To derive the surface order, the root+HABITUAL...PERFECT would have to move cyclically past the zone containing PLURAL ADDRESSEE, FINAL VOWEL, PASSIVE and INNER CAUSATIVE. This derivation is schematized in (75).

(75)



Third, two morphemes (INNER CAUSATIVE and PASSIVE) could merge below PERFECT in a left to right scopal order and two (FINAL VOWEL and PLURAL ADDRESSEE) above HABITUAL. The two morphemes above HABITUAL could merge in the mirror or non-mirror order. Let us consider the mirror syntax. To derive the surface order, the root first cycles across the PASSIVE, the INNER CAUSATIVE, the PERFECT and the HABITUAL giving us the constituent root⁴ in (76). Then we have a roll up derivation across across the FINAL VOWEL and the PLURAL ADDRESSEE.

(76)



The third derivation, (76), seems to be the right one. Here we will only concentrate on the PASSIVE and the INNER CAUSATIVE and leave discussion of the FINAL VOWEL and the PLURAL ADDRESSEE for chapter 4. First we consider the PASSIVE and show that the scope facts are consistent with its being part of the habitual-perfect zone. Then we look at the INNER CAUSATIVE and show that it has a double life: behaving as both high and low in the hierarchy of the clause. We will adopt the version that INNER CAUSATIVE is high, and postpone discussion of its low life to another section (section 6.7, chapter 6).

Let us turn to the PASSIVE morpheme: *w*. *w* is the eventive PASSIVE morpheme (It allows agentive by-phrases, control into agent-oriented purpose clauses e.t.c).

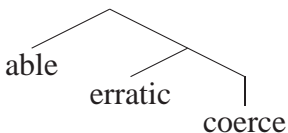
The PASSIVE morpheme usually triggers the demotion of the subject and subsequent promotion of another DP within its c-command domain to subject position, (77).

- (77) Î-tarû i-rî-riam-iir-j- w- e i-jeshi
 5-boat F-SA5-sink-PFV-IC- PAS- FV by-9.army
 ‘The boat was sunk by the army.’

Let us turn to the position of the PASSIVE in the hierarchy of the clause. In the auxiliary construction, HABITUAL occurs on BE, and PASSIVE on V, (78). This is evidence that the derivation taking the PASSIVE to merge below the HABITUAL is right.

- (78) Tw-ana i-tû-ig-ag-u-a tû-ûk-iir-j- w- e
 13-child F-SA13-be-HAB-VR-FV SA13-wake up-PFV-IC- PAS- FV
 ‘The children usually have been woken up.’ (e.g. by seven o’clock)

To complete the argument that PASSIVE could be part of the habitual-perfect zone, we need to show that it is also reasonably high in the clausal hierarchy, at least higher than morphemes hierarchically merged as in (79).

- (79) 

The evidence is compatible with PASSIVE merging above these morphemes.

Consider first the interaction between PASSIVE and COERCE. If COERCE scopes over PASSIVE, we expect the subject of the sentence to be interpreted as the coercer. If on the other hand PASSIVE scopes above COERCE we expect the matrix

subject to be interpreted as the causee (the one who is coerced). The facts show that the subject of the sentence is a causee, (80).

- (80) Jeshi n-î-riam- *ith*- iir-j- w- e î-tarû
 9.army F-SA₉-sink- CRC- PFV-IC- PAS- FV 5-boat
- a. *The army coerced the boat to sink by bombing it.
 b. The army was coerced to sink the boat e.g. by the army commander.

PASSIVE therefore scopes over COERCE and hence is higher in the clausal hierarchy than COERCE.

It would be nice if we could show that PASSIVE also scopes over morphemes immediately above COERCE - ABLE and ERRATIC. For the ERRATIC, scopes are untestable since the ERRATIC is not a morpheme that introduces arguments and therefore does not interact with PASSIVE scopally. ABLE and PASSIVE do not co-occur. There is no clear way to tell how much higher than COERCE PASSIVE is. But there is no knock-down argument against its being above ABLE and ERRATIC.

The PASSIVE morpheme also seems to be lower than the morpheme immediately below HABITUAL, the APPLICATIVE. The evidence that PASSIVE is lower than APPLICATIVE comes from passivization facts in reason applicatives. In reason applicatives, only the direct object can be passivized, (81a). The applied argument cannot, (81b).

- (81) a. Ū-kî bû-nyu- îr- îr- w- e kî-eba
 14-beer SA₁₄-drink- APL- PFV- PAS- FV 7-SORROW
 ‘Beer was drunk because of sorrow.’
- b. *Ki-eba i-kî-nyu- îr- îr- w- e û-kî
 7-SORROW F-SA₇-drink- APL- PST- PFV- FV 14-beer
 ‘Because of sorrow was drunk beer.’

If it is true that for a DP to move to subject under passivization it must be under the c-command of PASSIVE, then we understand why a reason applicative cannot move to subject: the APPLICATIVE is higher than PASSIVE, and hence the argument it introduces is also higher.⁴

⁴Non-reason applicatives e.g. benefactives and locatives allow passivization of both arguments. This might be due to the fact that these applied arguments are introduced by an APPLICATIVE suffix lower than PASSIVE, specifically the one that allows scope below COERCE.

Note that it is generally not the case that DPs such as ‘sorrow’ are banned from appearing in subject position under passivization. Such DPs are fine in other contexts (cf. (82a) (active) and (82b) (PASSIVE), we are not implying here PASSIVE sentences derive from active sentence).

- (82) a. A-ntû ba-ingî mûno i-ba-men-eet-e kî-eba
 2-people 2-many very F-SA₂-hate-PFC-FV 7-SORROW
 ‘Many people hate to be in a sorrowful mood.’
- b. Kî-eba i-kî-men-eet- w- e n-aa-ntû ba-ingî mûno
 7-SORROW F-SA₇-hate-PFC- PAS- FV by-2-person 2-many very
 ‘Being in a sorrowful mood is hated by many people.’

Although there might be other factors responsible for the contrast between (81b) and (82b) (e.g the differences in the interpretation of the DPs in subject position), it is also plausible that the differences are due to one DP being in the domain of PASSIVE, (82b) and the other being without, (81b).⁵

This concludes the argumentation that PASSIVE could be part of the habitual-perfect zone.

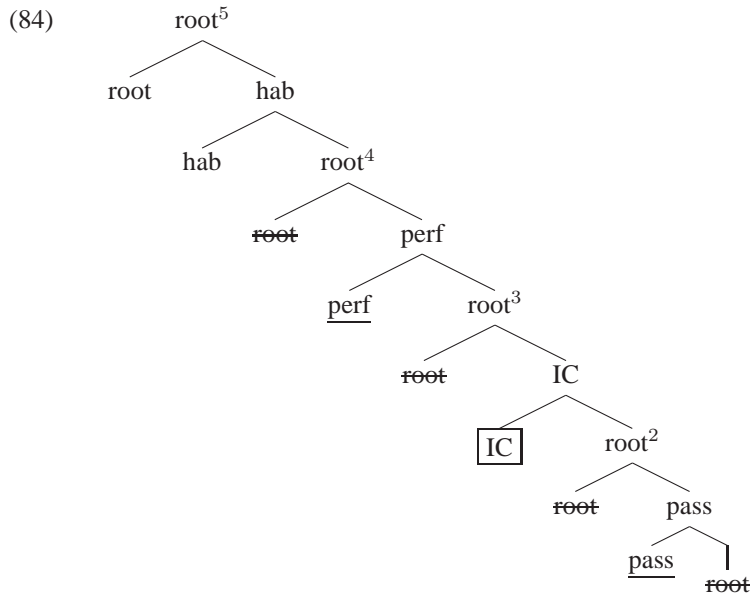
Let us turn finally to the INNER CAUSATIVE. A principle use of the INNER CAUSATIVE is to enable an intransitive verb to take an external argument (cf. (83a), (83b)). INNER CAUSATIVE is therefore a transitivizer.

- (83) a. Mw-ana a-gû-ûk-a
 1-child SA₁-T-wake up-FV
 ‘The child has woken up.’
- b. John a-gû-ûk- j- a mw-ana
 1.John SA₁-T-wake up- IC- FV 1-child
 ‘John has woken up the child.’

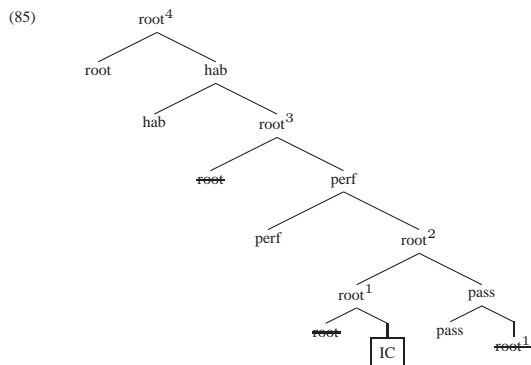
The INNER CAUSATIVE is sandwiched between PERFECT and PASSIVE, two morphemes we have confirmed are in zone where the root cycles through. Given its position between these two morphemes then the INNER CAUSATIVE also has to be part of this zone by the logic of our theory. It can be part of this

⁵We should note here that nothing really hinges on the success of this argument. Given that the APPLICATIVE merges immediately below HABITUAL, our theoretical machinery would never allow PASSIVE to be base-generated between HABITUAL and APPLICATIVE in a position higher than PERFECT. This structure would never be linearized since no restrictive derivation could bring PASSIVE to follow PERFECT.

zone in two ways: either it is base-generated between PERFECT and PASSIVE and cyclic Spec-to-Spec movement of the root past PASSIVE, INNER CAUSATIVE, PERFECT then HABITUAL results in the right surface order. This derivation is given in (84).



The INNER CAUSATIVE could also merge immediately below PASSIVE, and to get the right surface order, the root would strands it between PERFECT and PASSIVE as in (85).



Let us turn to the empirical side. In order to show that the INNER CAUSATIVE is part of the habitual-perfect zone, we need to show that it is not higher than HABITUAL the highest morpheme of this zone, and we need to show that the INNER CAUSATIVE is not very low in the hierarchy of the clause.

We have already seen that INNER CAUSATIVE is not higher than the HABITUAL: it appears on V in the BE auxiliary construction, (86).

- (86) John n-a-ig- **ag**- u-a a-ûk-iir- j- e tw-ana
₁.John F-SA₁-be- HAB- VR-FV SA₁-wake up-PFV- IC- FV ₁₃-child
 ‘John usually has woken up the children.’

Let us turn to the issue of how much lower than HABITUAL the INNER CAUSATIVE is. The situation appears to be paradoxical at best. First the INNER CAUSATIVE appears to be high, given the logic of the theory we are adopting: INNER CAUSATIVE is sandwiched between suffixes where the root moves cyclically Spec-to-Spec, (i.e. PERFECT and PASSIVE) SO INNER CAUSATIVE must also conform to this pattern. On the other hand, there is some evidence that INNER CAUSATIVE is quite low in the hierarchy of the clause. The first evidence for the low status of INNER CAUSATIVE comes from its interaction with the reversive morpheme, the second evidence comes from idiom formation and the third argument from scope between INNER CAUSATIVE and PASSIVE.

Let us start with with the evidence arising from the interaction of INNER CAUSATIVE with the reversive morpheme. Consider first the pair of sentences in (87). (87a) is the intransitive version and (87b) the transitive version with INNER CAUSATIVE.

- (87) a. Î-cembe rî-kû-thendam-a
₅-hoe SA₅-T-bend-FV
 ‘The hoe has bent.’
- b. Maria a-kû-thendam- **i**- a î-cembe
₁.Maria SA₁-T-bend- IC- FV ₅-hoe
 ‘Maria has bent the hoe.’

The reversive morphemes can be added to the sentences in (87). The reversive in Kîtharaka which has roughly the meaning of English *un* comes in two forms: a form which is purely reversive (*ûk*) and a form which is both transitive and reversive (*ûr*). (details in chapter 5)

In (88), we provide a sentence with the reversive morpheme: ‘the hole’ reverts from a bent state, and straightens.

- (88) Î-cembe rî-kû-thendam- **ûk**- a
₅-hoe SA₅-T-bend- REV- FV
 ‘The hoe has unbent (straightened).’

In (89), the reversive morpheme which also encodes transitivity is added. Interestingly, when the reversive transitive is added, the INNER CAUSATIVE cannot show up.

- (89) Maria a-kû-thendam- **ûr-** (***i-**) a î-cembe
 1.Maria SA₁-T-bend- REV.TR- IC- FV 5-hoe
 ‘Maria has straightened the hoe.’

One cannot rule out the co-occurrence of these two morphemes based on the phonology.

This kind of data suggests that the reversive can take over the transitivity duty carried out by *i* causative. Now it can be shown that the reversive scopes below COERCE: what is reversed is the bent state, (90a), not coercion, (90b).

- (90) Maria a-kû-thendam- **ûr-** **ith-** i-a John î-cembe
 1.Maria SA₁-T-bend- REV.TR- CRC- IC-FV 1.John 5-hoe
- a. Maria has coerced John to unbend (straighten) the hoe.
 b. *Maria coerced then un-coerced (begged) John to bend the hoe.

If the reversive (which sometimes also transitivity) is lower than COERCE, as shown by the scopes, then it isn't unnatural to hypothesize that the INNER CAUSATIVE, which also carries out a transitivity function is below COERCE. It is natural if morphemes serving the same functions occupy and therefore compete for the same syntactic position.⁶

The second evidence for the low placement of INNER CAUSATIVE in the hierarchy of suffixes has to do with idiom formation. The INNER CAUSATIVE forms idiosyncratic meanings in combination with roots, (91), (92), (93). These idiosyncratic meanings are very rare with COERCE. In fact the only one I am aware of is when read+COERCE means to teach.

- (91) a. ûka ‘wake up’
 b. ukja ‘get an erection’ (a sexual reading)

⁶There is a complication here in that the *i* causative and the reversive are not in complementary distribution, (90), which is expected if they serve the same function. In order to maintain that *i* and *ûr* occupy the same position generally, we have to say that one of the morphemes is a syntactic copy of the other in (90).

- (92) a. *itha* ‘hide’
 b. *ithja* ‘keep livestock with a friend’
- (93) a. *raara* ‘spend the night’
 b. *raarja* ‘keep watch at night’

Since the root and INNER CAUSATIVE can form an idiom, it must that the root and the INNER CAUSATIVE form a constituent at the exclusion of other suffixes. To form this constituent, the INNER CAUSATIVE must merge very low in the clause, next to the root. Hence the INNER CAUSATIVE must start very low in the hierarchy of the clause.

The third and last evidence for the low status of *i* causative comes from scope interaction with the PASSIVE. *Kîtharaka* can form impersonal PASSIVES from intransitive verbs such as “laugh”, (94).

- (94) I-kû-thek-ir- w- e
 F-SA₁₇-laugh-PFV- PAS- FV
 ‘Someone laughed.’

Let us turn to the scopal interaction between PASSIVE and the INNER CAUSATIVE. We expect two readings depending on the order of merge of PASSIVE and INNER CAUSATIVE. If passivization precedes causativization, we expect a reading where X caused someone to laugh, (95a). If passivization occurs after causativization, we expect a reading where X was caused to laugh, (95b).

- (95) a. [X caused [someone to laugh]]
 b. [X was caused [to laugh]]

Let us turn to the data. The available reading, (96b), suggests that the latter ordering of operations ((95b)) is correct: passivization succeeds causativization.

- (96) I-kû-thek-iir- j- w- e tw-ana
 F-SA₁₇-laugh-PFV- IC- PAS- FV 13-child
 a. *The children caused someone to laugh.
 b. The children were caused to laugh.

If it is true that scope relations are captured by c-command, the data in (96) suggests that INNER CAUSATIVE must be lower than PASSIVE at some point in the

derivation.

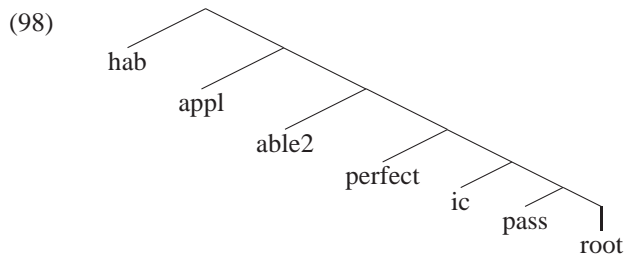
There is empirical evidence therefore that INNER CAUSATIVE is lower than COERCE. There is also contrasting evidence that *-i* is quite high in the structure: it appears very far right in the ordering of suffixes. The double behavior of INNER CAUSATIVE - appearing both low and high is a known paradox in Bantu scholarship (cf. e.g Hyman (2003b), Good (2005)). In this chapter we will merely go with the theory and assume that INNER CAUSATIVE is higher than COERCE and is sandwiched between PERFECT and PASSIVE. We will however dedicate a whole section to resolving the INNER CAUSATIVE paradox (section 6.7).

Summarizing, we have added four morphemes to the habitual-perfect zone. All these morphemes merge between HABITUAL and PERFECT, (98).

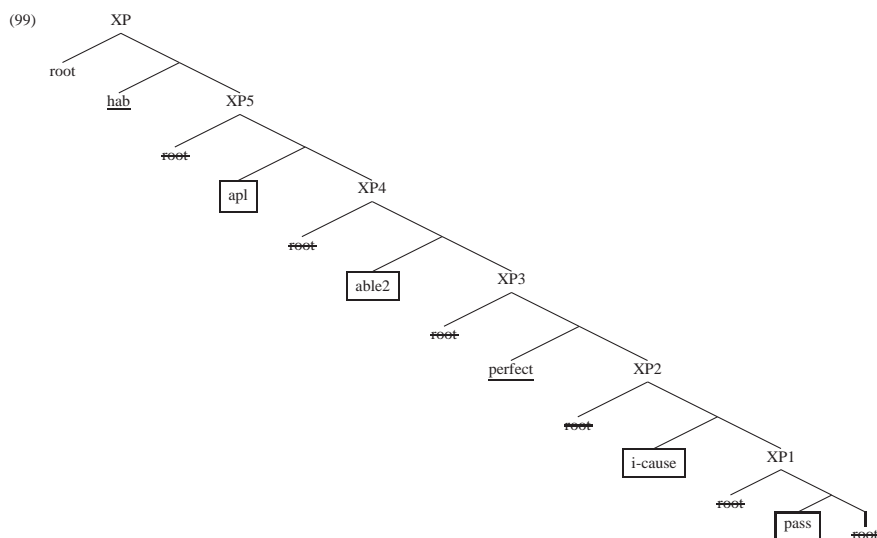
(97) HABITUAL > APPLICATIVE > ABLE2 > PERFECT > IC > PASSIVE

2.5 Cyclicity in a whole zone

As before, scopes translate into c-command. We can therefore unpack the scopes in (97) to the syntactic tree in (98).



Ignoring the presence of suffixes lower than *PASSIVE*, the surface order derives from the base order in (98) by cyclic Spec-to-Spec movement of the root to a position above the *HABITUAL*, (99).



To sum up, this chapter presents further evidence that the phrasal movements typical of syntax are also present in morphology, and that these movements may span over quite a large chunk of structure. The chapter therefore hints at the need to do morphology in syntax in fact as is suggested in Koopman and Szabolcsi (2000).

2.6 Appendix II: *hab* > *perf* zone and restructuring

Above, we have shown that morphemes of the habitual-perfect zone portray a left to right scope. We provide additional evidence in this section for the left to right scope of (some of) the suffixes of this zone using the distribution of the suffixes of this zone in restructuring contexts. First we show that passivization is a good test for restructuring - it is only possible within a single fseq. Then we show that the ordering of suffixes on a sequence of verbs in a restructuring context provides direct evidence for the left to right scope of (some of) the suffixes of the habitual-perfect zone.

We have seen clear contrasts between a mono-clausal context (AUX) and a bi-clausal context (TEMA) in section 2.2. One of these contrasts which we concentrate on here is that a mono-clausal context allows certain morphemes to occur only once, while a bi-clausal context allows such morphemes to ap-

pear twice with different interpretations. One morpheme that shows this contrast is the *ERRATIC* morpheme. The *TEMA* causative, a bi-clausal context can have two occurrences of the *ERRATIC* morpheme, (100).

- (100) Mw-arimû n-a-tem- **ang-** ir-e tw-ana tû-ceth- **ang-** a
 1-teacher F-SA₁-make- ERR- PFV-FV 13-child SA₁₃-play- ERR- FV
 ‘The teacher within a short time made the children to play at irregular intervals.’

In contrast, there can only be one *ERRATIC* in the *BE* auxiliary construction, which must occur on *V*. An *ERRATIC* on both the auxiliary and *V* results in ungrammaticality, (101).

- (101) Tw-ana tû-ka-îg- (***ang-**) u-a tû-ceth- **ang-** îr-e
 13-child SA₁₃-FT-be- ERR- VR-FV SA₁₃-play- ERR- PFV-FV
 ‘The children will have played at irregular intervals.’

A single *fseq* therefore has one *ERRATIC*, while two *fseqs* can have two.

Lets now turn to the interaction with passive. Consider the single-verb active sentences in (102), one without the *ERRATIC*, (102a), and the other with the *ERRATIC*, (102b).

- (102) a. Tw-ana i-tû-ceth-ir-e mû-biira
 13-child F-SA₁₃-play-PFV-FV 3-ball
 ‘The children played the ball.’
- b. Tw-ana i-tû-ceth- **ang-** ir-e mû-biira
 13-child F-SA₁₃-play- ERR- PFV-FV 3-ball
 ‘The children played the ball at irregular intervals.’

The two sentences can be passivized without a problem.

- (103) a. Mû-biira n-û-ceth-ir-w-e
 3-ball F-SA₃-play-PFV-PAS-FV
 ‘The ball was played.’
- b. Mû-biira n-û-ceth- **ang-** ir-w-e
 3-ball F-SA₃-play- ERR- PFV-PAS-FV
 ‘The ball was played at irregular intervals.’

Passivization is therefore possible across a single verb whether there is *ERRATIC* or not.

Let us turn to multi-verb contexts. Consider the two active sentences below, with the two verbs ‘begin’, and ‘play’ occurring in the same sentence. (104b) differs minimally from the (104a) in that (104b) has *ERRATIC* on the lowest verb.

- (104) a. Maria n-a-amb-îr-îît-i-e gû-ceth- a piano
_{1.Maria F-SA₁-begin-APL-PFC-IC-FV 15-play- FV 9.piano}
 ‘Maria has begun to play the piano.’
- b. Maria n-a-amb-îr-îît-i-e gû-ceth- **ang**- a piano
_{1.Maria F-SA₁-begin-APL-PFC-IC-FV 15-play- ERR- FV 9.piano}
 ‘Maria has begun to play the piano at irregular intervals.’

Both sentences can be passivized, (105).

- (105) a. Piano n-î-amb-îr-îît-i-e gû-ceth- **w**- a
_{9.piano F-SA₉-begin-APL-PFC-IC-FV 15-play- ERR- FV}
 ‘The piano has begun to be played.’
- b. Piano n-î-amb-îr-îît-i-e gû-ceth- **ang w**- a
_{9.piano F-SA₉-begin-APL-PFC-IC-FV 15-play- ERR- PAS- FV}
 ‘The piano has begun to be played at irregular intervals.’

The sentences with the two verbs ‘begin’ and ‘play’ behave like a single verb. They are transparent to passivization. Furthermore, the sentence with *ERRATIC* on the lower verb still behaves like a single verb, which also allows passivization in the presence of the *ERRATIC*. *ERRATIC* itself therefore does not block passivization.

In (106a), we have an active sentence with *ERRATIC* on ‘begin’. As (106b) shows, this sentence cannot be passivized.

- (106) a. Maria n-a-amb- **ang**- îr-îît-i-e gû-ceth-a piano
_{1.Maria F-SA₁-begin- ERR- APL-PFC-IC-FV 15-play-FV 9.piano}
 ‘Maria within a short time has begun to play the piano.’
- b. *Piano n-î-amb- **ang**- îr-îît-i-e gû-ceth- **w**- a
_{9.piano F-SA₉-begin- ERR- APL-PFC-IC-FV 15-play- PAS- FV}

This pattern is surprising given our conclusion above that *ERRATIC* does not block passivization. The pattern is expected however in light of our discussion on *TEMA* causatives and the *BE* auxiliary construction: when *ERRATIC* occurs on a higher verbal element (*TEMA*), it is telling us we are outside a single clause domain. Passivization therefore is only possible within an *fseq*. In a *fseq*, there is only one *ERRATIC*, and this *ERRATIC* occurs on the low (main) verb, as we saw in the *AUX* construction above.

As one might expect, passivization is also impossible when there is *ERRATIC* on ‘begin’ and ‘play’, (107a). The sentence is ungrammatical because we are in a bi-clausal context. Note that the active sentence is grammatical, (107b).

- (107) a. *Piano n-î-amb- **ang-** îr-îît-i-e gû-ceth- **ang- w-** a
 9.piano F-SA₉-begin- ERR- APL-PFC-IC-FV 15-play- ERR- PAS- FV
- b. Maria n-a-amb- **ang-** îr-îît-i-e gû-ceth- **ang-** a
 1.Maria F-SA₁-begin- ERR- APL-PFC-IC-FV 15-play- ERR- FV
 piano
 9.piano
 ‘Maria within a short time has begun to play the piano at irregular intervals.’

We can therefore conclude the following: whenever a verb preceding the main verb allows passivization across it, that verb does not introduce another *fseq*. Following the tradition, we will refer to those verbs as restructuring verbs (cf. Rizzi (1978), Cinque (2000), Cinque (2006)). ‘begin’ is therefore a restructuring verb. Note however that ‘begin’ is not always restructuring. It occurs in a bi-clausal structure that does not allow passive. Below we show that there are other verbs that behave like ‘begin’ above: they allow *ERRATIC* to occur on the light verb and the main verb in the active sentences, but with passivization, *ERRATIC* can only occur on the main verb.

Consider first the verb ‘finish’. It behaves like ‘begin’ above. With passivization, the *ERRATIC* can only occur on the lower V, (108a). It cannot occur on ‘finish’, (108b), or on both ‘finish’ and ‘play’, (108c).

- (108) a. Piano n-î-thir-îît-e gû-ceth- **ang- w-** a
 9.piano F-SA₉-finish-PFC-FV 15-play- ERR- PAS- FV
 ‘The piano has stopped being played irregularly.’
- b. *Piano n-î-thir- **ang-** îît-e gû-ceth- **w-** a
 9.piano F-SA₉-finish- ERR- PFC-FV 15-play- PAS- FV

- c. *Piano n-î-thir- **ang-** îît-e gû-ceth- **ang- w-** a
 9.piano F-SA₉-finish- ERR- PFC-FV 15-play- ERR- PAS- FV

The ERRATIC however has no problem occurring on ‘play’, on ‘finish’, or on both ‘finish’ and ‘play’ in a transitive clause, (109).

- (109) a. Maria n-a-thir-îît-i-e gû-ceth- **ang-** a piano
 1.Maria F-SA₁-finish-PFC-IC-FV 15-play- ERR- FV 9.piano
 ‘Maria has finished playing the piano irregularly.’
- b. Maria n-a-thir- **ang-** îît-i-e gû-ceth-a piano
 1.Maria F-SA₁-finish- ERR- PFC-IC-FV 15-play-FV 9.piano
 ‘Maria within a short time has finished playing the piano.’
- c. Maria n-a-thir- **ang-** îît-i-e gû-ceth- **ang-** a piano
 1.Maria F-SA₁-finish- ERR- PFC-IC-FV 15-play- ERR- FV 9.piano
 ‘Maria within a short time short has finished playing the piano irregularly.’

The conclusion is that ‘finish’ is a restructuring verb, but it is not always restructuring.⁷

Let us examine another verb that behaves like ‘begin’ and ‘finish’ above - ‘forget’. ‘Forget’ allows pasivization only when ERRATIC is on the lower verb. (110).

- (110) a. Piano n-î-rig-an-îr-îît-i-e gû-ceth- **ang- w-** a
 9.piano F-SA₉-forget-AN-APL-PFC-IC-FV 15-play- ERR- PAS- FV
 ‘The piano has forgotten to be played irregularly.’ - someone
 has forgotten to play the piano irregularly.
- b. *Piano n-î-rig-an- **ang-** îr-îît-i-e gû-ceth- **w-** a
 9.piano F-SA₉-forget-AN- ERR- APL-PFC-IC-FV 15-play- PAS- FV
- c. *Piano n-î-rig-an- **ang-** îr-îît-i-e gû-ceth- **ang- w-**
 9.piano F-SA₉-forget-AN- ERR- APL-PFC-IC-FV 15-play- ERR- PAS-
 a
 FV

⁷There are two verbs *rîtkania na* and *thirania na* which mean ‘to be done with’. Although these verbs have a meaning very close to ‘finish’, they do not allow passivization of the object across them. They are probably not restructuring verbs.

As with other verbs, ERRATIC can occur on V, on the light verb ‘forget’, or on both ‘forget’ and V when there is no passive, (111).

- (111) a. Maria n-a-rig-an-îr-îît-i-e gû-ceth- **ang**- a piano
 1.Maria F-SA₁-forget-AN-APL-PFV-IC-FV 15-play- ERR- FV 9.piano
 ‘Maria has forgotten to play the piano irregularly.’
- b. Maria n-a-rig-an- **ang**- îr-îît-i-e gû-ceth-a piano
 1.Maria F-SA₁-forget-AN-ERR- APL-PFC-IC-FV 15-play-FV 9.piano
 ‘Maria within a short time has forgotten to play the piano.’
- c. Maria n-a-rig-an- **ang**- îr-îît-i-e gû-ceth- **ang**- a
 1.Maria F-SA₁-forget-AN- ERR- APL-PFC-IC-FV 15-play- ERR- FV
 piano
 9.piano
 ‘Maria within a short time has forgotten to play the piano ir-
 regularly.’

The verbs ‘begin’, ‘forget’, ‘finish’, are therefore restructuring when passive has occurred across them.

Let us turn to the combinatorics. Is it possible to have all these three verbs in one sentence that has undergone passivization? Indeed this possible, but there is a condition - these verbs have to be ordered in a rigid manner. Of the expected six combinations of the three restructuring verbs, only one order is possible, (112a).

- (112) a. BEGIN FORGET FINISH [PLAY-PASS]
 b. *BEGIN FINISH FORGET [PLAY-PASS]
 c. *FORGET FINISH BEGIN [PLAY-PASS]
 d. *FINISH FORGET BEGIN [PLAY-PASS]
 e. *FORGET BEGIN FINISH [PLAY-PASS]
 f. *FINISH BEGIN FORGET [PLAY PASS]

This is additional evidence for these verbs being restructuring: restructuring verbs identify the contents of heads in the fseq (Cinque (2006)). Since the functional heads themselves are rigidly ordered, restructuring verbs also must be rigidly ordered.⁸

⁸When there is no passivization, ‘begin’ and ‘forget’ can be reordered: One can forget to begin to write a paper. No other re-orderings are possible however. Thus ‘finish’ cannot precede forget, or ‘begin’. There are two ways one could view this data. One, is that in the

We illustrate only the grammatical example in (113).

- (113) Piano î-kû-amb-îr-i-a kû-rig-an-îr-i-a kûthir-a
 9.piano SA₉-T-begin-APL-IC-FV 15-forget-AN-APL-IC-FV 15-finish-FV
 gû-ceth- **w-** a
 15-play- PAS- FV
 ‘The piano has begun to be forgotten to be finished to be played.’ -
 someone has begun to forget to finish to play the piano.

The ordering of some of the restructuring verbs conforms to the order in other languages. Cinque (2001) has shown that inceptive aspect, which ‘begin’ spells out is above completive aspect which can be spelled out by ‘finish’, (114). (It is not clear where ‘forget’ would fall in the hierarchy, Kîtharaka suggests it is between inceptive and completive aspect. It is also not clear what functional head, it would be spelling out.)

- (114) inceptive (begin) > completive (finish).

Let us turn to the patterns of passivization. Do the sentences with three restructuring verbs behave like the sentences with one restructuring verb with respect to passivization? They do. Passivization of the object is only possible when the ERRATIC occurs on the main verb, (115).

- (115) Piano î-kû-amb-îr-i-a kû-rig-an-îr-i-a kûthir-a
 9.piano SA₉-T-begin-APL-IC-FV 15-forget-AN-APL-IC-FV 15-finish-FV
 gû-ceth- **ang- w-** a
 15-play- ERR- PAS- FV
 ‘The piano has begun to be forgotten to be finished to be played irregularly.’ - someone has begun to forget to finish to play the piano irregularly.

absence of morphemes that force a bi-clausal structure e.g. ERRATIC and others, these verbs are also restructuring even when passivization has not occurred (cf. Cinque (2006) for this strong view on restructuring verbs). One would then have to say that either ‘begin’ has two positions in fseq (lexicalizing inceptive aspect 1 and inceptive aspect 2), or that ‘forget’ has two positions lexicalizing two properties in an fseq, whatever these properties are). The other alternative would be that without passivization, the three verbs are not restructuring. We think the first view is more appropriate. There is no simple answer for the rigidity in the ordering of ‘finish’ and other verbs even without passivization for the second view, but the first view has a simple answer: these verbs in the non-passive sentence also are restructuring, they lexicalize functional heads rigidly ordered and therefore must be rigidly ordered too. There is a residue issue to be addressed on the second view however: why there is only one inceptive head with passivization, but two when passivization has not occurred. We do not have an enlightening answer for this problem.

If ERRATIC appeared on any of the preceding verbs, the sentences would be ungrammatical, (116).

- (116) a. *Piano \hat{i} -k \hat{u} -amb- \hat{i} r-i-a k \hat{u} -rig-an- \hat{i} r-i-a k \hat{u} thir-
 9.piano SA₉-T-begin-APL-IC-FV 15-forget-AN-APL-IC-FV 15-finish-
ang- a g \hat{u} -ceth- **w-** a
 ERR- FV 15-play- PAS- FV
- b. *Piano \hat{i} -k \hat{u} -amb- \hat{i} r-i-a k \hat{u} -rig-an- **ang-** \hat{i} r-i-a k \hat{u} thir-a
 9.piano SA₉-T-begin-APL-IC-FV 15-forget-AN- ERR- APL-IC-FV 15-finish-FV
 g \hat{u} -ceth- **w-** a
 15-play- PAS- FV
- c. *Piano \hat{i} -k \hat{u} -amb- **ang-** \hat{i} r-i-a k \hat{u} -rig-an- \hat{i} r-i-a k \hat{u} thir-a
 9.piano SA₉-T-begin-ERR- APL-IC-FV 15-forget-AN-APL-IC-FV 15-finish-FV
 g \hat{u} -ceth- **w-** a
 15-play- PAS- FV

To sum up, the sentences with multi-verbs above behave like a single fseq, because they allow passivization only when the ERRATIC is on the main verb. These verbs also behave like a single fseq in conforming to a rigid ordering, when passivization has occurred across them.

To complete the argument that passivization is a good test for single fseqs, we need to show that passivization impossible across TEMA, whether there is ERRATIC or not. This is expected since TEMA always is a bi-clausal situation. At first site, this prediction seems not to be borne because passivization is okay in TEMA clauses without the ERRATIC, (117).

- (117) Maria n-a-tem- \hat{i} r-e a-cunc- **w-** a
 1.Maria F-SA-1-make-PFV-FV SA-1-kiss- PAS- FV
 ‘Maria made herself be kissed.’

In fact passivization is also possible when there is ERRATIC, on the light verb, (118a), or on both the verb and TEMA.

- (118) a. Maria n-a-tem- **ang-** ir-e a-cunc- w- a
₁.Maria F-SA-₁-make- ERR- PFV-FV SA₁-kiss- PAS- FV
 ‘Maria within a short time made herself be kissed.’
- b. Maria n-a-tem- **ang-** ir-e a-cunc- **ang-** w- a
₁.Maria F-SA-₁-make- ERR- PFV-FV SA₁-kiss- ERR- PAS- FV
 ‘Maria within a short time made herself to kissed for a longer time than before.’

Does this mean passivization is possible across clause boundaries? Not quite. Although superficially similar to the clauses with restructuring verbs, the clauses with TEMA in (117) and (118) differ substantially from those with restructuring verbs in that TEMA clauses can allow a DP distinct from the matrix DP in the subject of the embedded clause. None of the restructuring contexts we have looked at allow DPs in the position intermediate between the verbs. Thus instead of co-reference between the matrix and the embedded subjects in (117) and (118), the matrix and the embedded subject DPs could be disjoint in reference. The sentences in (117) and (118) can therefore get different readings: *Maria made someone to be kissed*, (117), *Maria within a short time made someone to be kissed*, (118a), and *Maria within a short time made someone to be kissed for a longer period of time than before*, (118b). From this data, we can conclude that what appears to be movement of the object across TEMA is not really movement: it is an illusion arising from Maria being co-indexed with a null element in the subject position of the embedded clause. Passivization therefore is bound to the embedded clause, and hence passivization is only possible within a single clause as before.

Now that we are sure passivization is telling us the sentences with certain sequences of verbs are a mono-clausal context, we can check on what verbs the suffixes of the habitual-perfect zone cliticize on when there is a sequence of such verbs. Let us start with the HABITUAL and the PERFECT morphemes.

If we have PERFECT but NO HABITUAL in a sentence with a sequence of restructuring light Vs, the generalization is that PERFECT goes on the first verb in a sequence except BE. We schematize this pattern in (119). (take V1 to precede V2 in (119).)

- (119) a. ✓ V1-perf V2
 b. *V1 V2-perf
 c. ✓ BE V-perf
 d. *Be-perf V

These first two patterns are illustrated in (120). In (120a), PERFECT occurs on

the first verb. ‘begin’. This form is grammatical. (120b) is ungrammatical because PERFECT occurs on the second verb (excluding BE). In (120b), we have added the BE auxiliary in order to be able to introduce subject agreement features on the verb where PERFECT occurs. The PERFECT never occurs on a verb with infinitive morphology. So to give the sentence a chance, we have fulfilled the conditions that PERFECT requires, yet the sentence is ungrammatical.

- (120) a. Piano n-î-amb-îr- **îit-** i-e gû-ceth-w-a
 9.piano F-SA9-begin-APL- PFC- IC-FV 15-play-PAS-FV
 ‘The piano has begun to be played.’
- b. *Piano î-kû-ambîr-i-a kû-îgu-a î-ceth- **eet-** w-e
 9.piano SA9-T-begin-APL-IC-FV 15-be-FV SA9-play- PFC- PAS-FV

PERFECT never appears on BE, (121). (We speculate on why this is so in Appendix A.)

- (121) *Mû-biira n-û-îg- **îit-** u-e û-gû-ceth-w-a
 3-ball F-SA3-be- PFC- VR-FV SA3-T-play-PAS-FV

Let us turn to the HABITUAL. The HABITUAL always attaches to the first verb in a sequence, (122).

- (122) a. V1-hab V2
 b. V1 V2-*hab

We illustrate the patterns in (122) in (123). The contrast between (123a) and (123b) shows the HABITUAL must attach to the first verb.

- (123) a. Piano n-î-amb- **ag-** îr-i-a gû-ceth-w-a
 9.piano F-SA9-begin- HAB- APL-IC-FV 15-play-PAS-FV
 ‘The piano usually begins to be played.’
- b. *Piano î-kû-ambîr-i-a gû-ceth- **ag-** w-a
 9.piano SA9-T-begin-APL-IC-FV SA15-play- HAB- PAS-FV

In contrast to PERFECT, HABITUAL can occur on BE, (124).

- (124) Mû-biira n-û-îg- **ag-** u-a û-gû-ceth-w-a
 3-ball F-SA3-be- PFC- VR-FV SA3-T-play-PAS-FV
 ‘The ball usually has been played.’

Let us turn now to the combinatorics. When the HABITUAL and the PERFECT co-occur in a restructuring context, the distribution is very striking. HABITUAL attaches to the highest available verb, and the PERFECT to the second available verb excluding BE. These patterns are summarized below (recall that when HABITUAL and PERFECT co-occur, BE insertion is required. Read the table below as follows: HABITUAL and PERFECT are suffixes to the verb on their immediate right. bgn=begin, fgt=forget, fin=finish, pl=play.) Thus in the first row, HABITUAL is a suffix on BE, and PERFECT a suffix on ‘begin’.

hab	be	perf	bgn		fgt		fin		pl-pass	
hab			bgn	be	perf	fgt		fin	pl-pass	
hab			bgn		be	perf	fin		pl-pass	
hab			bgn				be	perf	pl-pass	
hab					fgt	be	perf	fin	pl-pass	
hab					fgt		be	perf	pl-pass	
hab							fin	be	perf	pl-pass
hab							be	perf	pl-pass	

We will try to provide an account of the pattern above in Appendix A.

Let us provide one example to illustrate the grammatical pattern. In (125), HABITUAL is a suffix on ‘begin’, and PERFECT a suffix on ‘forget.’ Recall that in passives sentences with several restructuring verbs, ‘begin’ precedes ‘forget’.

- (125) Piano n-î-amb- **ag**-îr-i-a kû-îg-u-a î-rig-anî-îr-
 9.piano F-SA₉-begin- HAB- APL-IC-FV 15-be-VR-FV 15-forget-AN-APL-
îr- i-e kûthir-a gû-ceth- w- a
 PFC- IC-FV 15-finish-FV 15-play- PAS-FV
 ‘(After 20 minutes into piano playing) someone usually begins to forget to finish playing it.’

Switching the pattern above results in ungrammaticality, (126). In (126), HABITUAL appears on ‘forget’, and PERFECT on ‘begin’. PERFECT cannot appear on a verb more leftmost in a sequence of restructuring verbs than the verb that contains HABITUAL. (All other sentences that violate this requirement will be

ungrammatical.)

- (126) *Piano n-î-amb-îr- **ñt** i-e kû-rig-an- **ag** î-îr-i-a
 9.piano F-SA₉-begin-APL- PFC- IC-FV 15-forget-AN- HAB- APL-IC-FV
 kûthir-a gû-ceth- w- a
 15-finish-FV 15-play- PAS- FV

If we assume that the ordering of the restructuring verbs represents a left to right scopal hierarchy, then we arrive at the conclusion that HABITUAL is higher than PERFECT. This is so because HABITUAL always attaches to a verb leftmost (and therefore higher) than the verb on which the PERFECT attaches.

We can also get confirmation for the ordering of two other morphemes of the HABITUAL perfect zone - INNER CAUSATIVE and PASSIVE. Recall that in terms of scope, these morpheme are below the PERFECT. This scope is reflected in the restructuring context. In (127), PERFECT occurs on the first verb and the PASSIVE and the INNER CAUSATIVE must always occur on the main verb. If it is true that restructuring contexts have the verbs showing a left to right hierarchy, then the PERFECT must be higher than both the PASSIVE and the INNER CAUSATIVE.

- (127) Nguo i-cî-î-rig-an-î-îr- **ñt** i-e kûthir-a kû-thamb- j-
 10.clothes 15-forget-AN-APL- PFC- IC-FV 15-finish-FV 15-wash- IC-
 w- a
 PAS- FV
 ‘Someone has forgotten to finish to wash the clothes.’

The distribution of the HABITUAL, the PERFECT, the INNER CAUSATIVE and the PASSIVE in restructuring contexts leads us to the hierarchy of these suffixes in (128), which is the very hierarchy we established in section 2.5.

- (128) HABITUAL > PERFECT > INNER CAUSATIVE > PASSIVE

Let us turn to the other two suffixes that occur between HABITUAL and PERFECT. These are the APPLICATIVE and ABLE2. Recall that on a single verb these suffixes appear between HABITUAL and PERFECT by transitivity.

- (129) Verb-HABITUAL-APPLICATIVE-ABLE2-HABITUAL

In order to conclude that these morphemes are between HABITUAL and PERFECT in a restructuring context, there are at least three ways these suffixes could distribute on the verbs containing HABITUAL and PERFECT. First, APPLICATIVE and ABLE2 could suffix after the HABITUAL in the order V-HABITUAL-APPLICATIVE-ABLE2 (the first row in the table below). Alternatively, the two

suffixes can be on the verb with PERFECT, and suffixed before the PERFECT in the order APPLICATIVE, ABLE2 (the second row). Finally, APPLICATIVE can be a suffix on the HABITUAL, and ABLE2 a suffix on the verb with PERFECT (the third row).

Verb-HABITUAL-APPLICATIVE-ABLE2	V-PERFECT
Verb-HABITUAL	V-APPLICATIVE-ABLE2-PERFECT
Verb-HABITUAL-APPLICATIVE	V-ABLE2-PERFECT

We find none of these scenarios in a restructuring context. The APPLICATIVE occurs deeply on the main verb, and the main verb can be separated from the verb containing both HABITUAL and PERFECT by another restructuring verb, ‘finish’ in (130).

- (130) Piano n-î-îg- **ag**-u-a j-amb-îr- **îit**-i-e kû-rig-an-î-îr-i-a
 9.piano F-SA₉-be-HAB- VR-FV SA₉-begin-APL-PFC- IC-FV 15-forget-AN-APL-IC-FV
 kûthir-a gû-ceth- **er**- w- a kî-rasi-ni
 15-finish-FV 15-play- APL- PAS- FV 7-class-LC
 ‘(After 20 minutes into piano playing) someone usually has begun to forget to finish playing it in class.’

The scenario for ABLE2 is similar to that of the APPLICATIVE: ABLE2 occurs deeply embedded on the main verb, and the main verb can be separated from the verb containing both HABITUAL and PERFECT by another restructuring verb, ‘finish’ in (131).

- (131) Piano n-î-îg- **ag**-u-a j-amb-îr- **îit**-i-e kû-riganî-îr-i-a
 9.piano F-SA₉-be-HAB- VR-FV SA₉-begin-APL-PFC- IC-FV 15-forget-APL-IC-FV
 kûthir-a gû-ceth-ek-ang- **îk**- a
 15-finish-FV 15-play-ABL-ERR- ABL- FV
 ‘Someone usually has begun to forget to finish playing the piano irregularly.’

It appears like APPLICATIVE and ABLE2 get trapped on the lowest verb in a restructuring context. This might suggest at least some applicative (e.g. the low applicative), and ABLE2 get to the habitual-perfect zone by movement. We examine movement of the APPLICATIVE in chapter 6, and touch on the trapping of APPLICATIVE and ABLE2 on the lowest verb in Appendix A.

Chapter 3

The verbal prefixes

In this chapter we continue our description and analysis of clausal architecture in Kîîtharaka by looking at the verbal prefixes. We will show that the relative positioning of the prefixes *viz-à-viz* the suffixes can still be nicely captured by our theoretical machinery - that of moving a sub-tree containing the verb.

The chapter is organized as follows. First we look at the distribution of the prefixes. Then we examine the theoretical options available for the merge of the prefixes. Finally, we make the choices based on empirical evidence.

3.1 Distribution

The prefixes come in a fixed order. Consider first the FOCUS MARKER which has two allomorphs: *n* pre-vocally and *i* pre-consonantly (for details on the Kîîtharaka FOCUS MARKER, see Muriungi (2003), Muriungi (2005), Abels and Muriungi (2006), Abels and Muriungi (2008)). Both allomorphs of the FOCUS MARKER precede SUBJECT AGREEMENT, (1a), (1b).¹

- (1) a. **N- a-** in-ir-e
F- SA₁- sing-PFV-FV
'S/he sung.'
- b. **I- ki-** in-ir-e
F- SA₇- sing-PFV-FV
'It sung.'

¹The focus marker also precedes subject agreement in Bantu languages related to Kîîtharaka, for example Kikuyu, (see e.g. Barlow (1960), Bergvall (1987), Mungane (1997)), Kiambu, Mbeere, Kamba and Tigania (based on my fieldwork).

(2) FOCUS MARKER-SUBJECT AGREEMENT

(It is possible for one to take what I label as SUBJECT AGREEMENT as the third person nominative pronouns ‘s/he’ and ‘it’ for (2a) and (2b) respectively. Since however these are the forms that would occur even when an overt noun of the relevant class is present, I will continue to call them SUBJECT AGREEMENT. In the absence of an overt noun, it might that SUBJECT AGREEMENT agrees with a silent pronominal element.)

Consider next NEGATION. The Kîtharaka negative marker has two allomorphs: *ti* and *ta*. The exact range of conditions governing the allomorphy are not very clear at the moment. One condition that does govern the allomorphy however, for some tenses, and in root clauses is clause type: whether the clause is a declarative sentence or a *wh*-construction. Thus for the *kû* tense marker, the negation allomorph *ti* is used to negate the declarative sentence, (3).

- (3) A-kûrû ba- { $\sqrt{\text{ti}}$ | $\sqrt{\text{ta}}$ }- **kû**- rug-a nyama
 2-men sa₂- {NEG | NEG}- T- COOK-FV 10.meat
 ‘The men are not cooking meat.’

In contrast, in clauses that have *kû* and that have undergone *wh*-movement for example *wh*-questions, (4a), focus constructions (4b), and relative clauses (4c), the negative allomorph must be *ta*.²

- (4) a. I-mbi a-kûrû ba- { $\sqrt{\text{ti}}$ | $\sqrt{\text{ta}}$ }- **kû**- rug-a
 F-what 2-men sa₂- {NEG | NEG}- T- COOK-FV
 ‘What aren’t the men cooking?’
- b. I-nyama a-kûrû ba- { $\sqrt{\text{ti}}$ | $\sqrt{\text{ta}}$ }- **kû**- rug-a
 F-10.meat 2-men sa₂- {NEG | NEG}- T- COOK-FV
 ‘It is meat the men aren’t cooking.’
- c. Nyama i-ra a-kûrû ba- { $\sqrt{\text{ti}}$ | $\sqrt{\text{ta}}$ }- **kû**- rug-a
 10.meat 10-that 2-men sa₂- {NEG | NEG}- T- COOK-FV
 ‘The meat which the old men didn’t cook.’

²Topicalization would take the *ti* allomorph in this context and therefore does not count as *wh*-movement. Topicalization also differs from *wh*-movement in allowing resumption when there is no syntactic island. *Wh*-movement allows resumption only when there is a syntactic island.

This allomorphy is also found in yes/no questions, but the conditions governing it seem to be different from those above (at least we don't see a way to unify all of them now). If the yes/no question does not have the focus marker, the negative allomorph is *ti*, (5a). If there is a focus marker, the negative marker must be *ta*, (5b).

- (5) a. A-kûrû ba- {✓**ti** | ***ta**}- **kû**- rug-a nyama kana
 2-men sa₂- {NEG | NEG}- T- cook-FV 10.meat Q
 'Is it the case the men aren't cooking meat?'
 b. A-kûrû **i**- ba- {***ti** | ✓**ta**}- **kû**- rug-a nyama kana
 2-men F- sa₂- {NEG | NEG}- T- cook-FV 10.meat Q
 'Is it the case the men aren't cooking meat?'

Let us turn to the linear position of NEGATION. Both allomorphs occur between SUBJECT AGREEMENT and the tense marker *kû*. All other tense markers in Kîtharaka would occur in the same position on the verb: the tense markers therefore are in complementary distribution. We can therefore summarize the ordering of the prefixes so far as in (6).

- (6) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE

The order in (6) is transparently reflected in (5b) above. We should note here that not all Bantu languages have a fixed position for negation as we see in Kîtharaka. In some languages e.g. Chichewa (Hyman (2003b) and references cited therein), negation precedes subject agreement in root clauses but follows subject agreement in embedded clauses. In other Bantu languages e.g. Swahili, negation can be both prefixal and suffixal (Ngonyani (2006)).

Let us move on to the other two prefixes, the OBJECT MARKER and the REFLEXIVE. First we consider the OBJECT MARKER.

Although called the OBJECT MARKER in Bantu literature, the OBJECT MARKER does not "saturate" only a direct object theta role, (7).

- (7) I-ba- ra- **ci**- rug-ir-e
 F-SA₂- PST_Y- OM₁₀- cook-PFV-FV
 'They cooked it.'

The OBJECT MARKER can also "saturate" a benefactive theta role, (8a), or a causee theta role, a theta role usually associated with the embedded external argument in coerce causatives, (8b).

- (8) a. I-ba- ra- **ba-** rug- **î** -îr-e mpempe
 F-SA₂- PST_Y- OM₂- COOK- APL- PFV-FV 10.maize
 ‘They cooked maize for them.’
- b. I-ba- ra- **mû-** rug- **ith-** iir-i-e mpempe
 F-SA₂- PST_Y- OM₁- COOK- CRC- PFV-IC-FV 10.maize
 ‘They coerced him/her to cook maize.’

In line with the tradition, we will still continue to call these morphemes object markers.

(Note that in (7) and (8), that the object markers differ with noun class. Arguably therefore the object markers encode (some of) the features of nouns e.g. number, and noun class. Object markers also encode first and second person - the 3 person singular behaves like class 1 nouns, and the 3rd person plural like the plurals of class 1, which is class 2.)

There are some restrictions with object marking in Kîtharaka. The first is that there can only be one OBJECT MARKER on a verb. Kîtharaka therefore differs from other Bantu languages such as Sambia (Riedel (2007), where three object markers can occur preverbally. Riedel claims that in a context with three post-verbal XPs, the linear order of object markers mirrors that of the post-verbal XPs they are co-indexed with, as shown in (9).

- (9) a. indirect object < direct object < locative adjunct
 b. OM_{locative} < OM_{direct object} < OM_{indirect object} < V

Let us turn to a second restriction. This restriction concerns cases where both the object marker, and the DPs it is co-indexed with co-occur. In this scenario, the DPs have to be dislocated to the left, or to the right of the sentence, with a pause separating the DP and the following or preceding constituent, (10).

- (10) a. Ka-ana i-ba- *(ga)- tûm-ir-e
 12-child F-SA₂- OM₁₂- send-PFV-FV
 ‘The child, they sent it.’
- b. I-ba- *(ga)- tûm-ir-e ka-ana
 F-SA₂- OM₁₂- send-PFV-FV 12-child
 ‘They sent it, the child.’

(When there is more than one post-verbal object, the right dislocated DP has to be phonologically heavy, resembling in some sense the heavy NP shift

construction in languages like English.)

Another restriction shows up when there are three post-verbal arguments, namely an applied argument, a causee (the embedded external argument), and a direct object. In this context, the OBJECT MARKER can only “saturate” the applied theta role, (11).

- (11) I-ba-ra- **ka-** thamb-ith-î-îr-i-e Maria nyomba
 F-SA₂-PST_Y- OM₁₂- wash-CRC-APL-PFV-IC-FV 1.Maria 9.house
 ‘They coerced Maria to wash the house for it (e.g. the cat).’

(12a) and (12a) show respectively, that the OBJECT MARKER cannot “saturate” a causee and direct object theta role in the presence of the applied argument.

- (12) a. *N-a-ra- **ba-** thamb-ith-î-îr-i-e ka-baka nyomba
 F-SA₁-PST_Y- OM₂- wash-CRC-APL-PFV-IC-FV 12-cat 9.house
 ‘He/she coerced them to wash the house for the cat.’
- b. *I-ba-ra- **mî-** thamb-ith-î-îr-i-e Maria ka-baka
 F-SA₂-PST_Y- OM₉- wash-CRC-APL-PFV-IC-FV 1.Maria 12-cat
 ‘They coerced Maria to wash it for the cat.’

The restriction that the OBJECT MARKER “saturates” only the applied argument does not apply when there are two post-verbal arguments, as in the ditransitive applicative construction. Both the direct object, (13a), and the applied argument, (13b) (the two post-verbal arguments) can be object marked.

- (13) a. Maria a-kû- **mî-** tûm-îr-a John
 1.Maria SA₁-T- OM₉- send-APL-FV 1.John
 ‘Maria has sent it (e.g. a letter) to John.’
- b. Maria a-kû- **mû-** tûm-îr-a barûa
 1.Maria SA₁-T- OM₁- send-APL-FV 9.letter
 ‘Maria has sent him/her a letter.’

The restriction on object marking only one argument is also suspended on the productive reading of the COERCE causative - the coercive reading. Here both the direct object, (14a), and the causee, (14b), can be co-indexed.³

³The coerce causative has two other unproductive readings, an adversative and an assistive reading. These behave differently in that it is only the DP that is assisted or adversely affected that can be expressed as an OBJECT MARKER.

- (14) a. Mu-borisi a-kû- **mî**- nyu-ithi-a mû-ûragani
 1-police SA₁-T- OM₉- drink-CRC-IC-FV 1-murderer
 ‘The policeman has coerced the murderer to drink it (e.g. the poison).’
- b. Mu-borisi a-kû- **mû**- nyu-ithi-a cûmû
 1-police SA₁-T- OM₁- drink-CRC-IC-FV 9.poison
 ‘The policeman has coerced him/her to take the poison.’

The contrast in object marking between cases with three post-verbal arguments and cases with only two arguments needs to be accounted for. Why is the freedom in object marking the post-verbal arguments suddenly constrained with three arguments? Since the resolution of this issue is not central to the core argumentation of this chapter, I will just explore here the beginnings of a solution to the contrast. It might be that object marking is always possible for the highest non-subject argument. The claim then would be that in cases with two post-verbal arguments, there is a dual structure, and each of the arguments can be the highest argument in one of the structures. For the cases with three arguments, the hypothesis would be that a bipartite structure is impossible - only a single hierarchical structure exists. Another plausible alternative would be that in contexts where both arguments can be object marked, one object in the relevant construction lacks the properties relevant for object marking, and therefore does not act as a competitor for object marking. All the objects would have that property in cases with three post-verbal arguments.

Let us turn to the position of the OBJECT MARKER in the sequence of prefixes. It follows the tense marker *kû*, (14), allowing us to extend our ordering of prefixes to (15).

- (15) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE- OBJECT MARKER

Let us finally look at the REFLEXIVE. The REFLEXIVE differs from the object marker in that it occurs in the same form across noun classes - it is always *î*. The reflexive however is like the object marker in that it is not tied to a particular theta role. It can “saturate” a direct object theta role, (16a), an applied theta role, (16b), or a causee theta role, (16c).

- (16) a. N-î-ra- **î**- kiny-ir-e
 F-SA₉-PST_Y- REFL- step on-PFV-FV
 ‘It stepped on itself.’

- b. I-ba-ra- **î-** bog- **e-** er-e nkû
 F-SA₂-PST_Y- REFL- tie- APL- PFV-FV ₁₀.firewood
 ‘They tied firewood for themselves.’
- c. I-ba-ra- **i-** kiny- **ith-** iir-i-e njoka
 F-SA₂-PST_Y- REFL- step on- CRC- PFV-IC-FV ₉.snake
 ‘They coerced themselves to step on the snake.’

Let us turn to the restrictions on the distribution of the reflexive. There are at least two of them. The first is that there can be maximally only one reflexive pre-verbally in Kîîtharaka. Thus even in a context where one could imagine that two reflexives could be licensed e.g. a sentence with the English glossing: *They coerced the player to injure himself for themselves*, two reflexives are still impossible. One would need to use a paraphrase with the analytic TEMA causative to convey this meaning: *They made the player injure himself because of them*.

The other restriction has to do with what co-indexations are possible when there are more than two arguments in the sentence. Let us start with the case when there are three arguments, one pre-verbal (the subject) and two post-verbal (the applied and the direct object). Here only two co-indexations are possible: between the subject and the direct object, and between the subject and the applied object, (17a), and (17b).

- (17) a. I-ba-ra- **î-** bog- **e-** er-e tu-genke
 F-SA₂-PST_Y- REFL- tie- APL- PFV-FV ₁₃-toddler
 ‘They_i tied the toddlers for themselves_i.’
- b. N-a-ra- **î-** bûrag- **î-** îr-e a-coore ba-a-ke
 F-SA₁-PST_Y- REFL- tie- APL- PFV-FV ₂-friend ₂-ASS₂-her/him
 ‘He_i killed himself_i for his friends.’

The direct object and the applied argument cannot be co-indexed, (18a). Note that this sentence is grammatical on the reading where the subject and the applied argument are co-indexed, (18b).

(18) Mw-arimû n-a-ra- î- tur- î- îr-e tw-ana
 1-teacher F-SA₁-PST_Y- REFL- cane- APL- PFV-FV 13-child

- a. *The teacher caned the children_i for themselves_i. (so that they do well in school)
 b. ✓The teacher caned the children for himself.

The freedom observed with co-indexation in the applicative construction is severely restricted when there is a coercer argument in the structure. Thus in contexts with three arguments, where the preverbal argument is the coercer, and the post-verbal arguments the causee and the direct object, co-indexation is only possible between the coercer and the causee, (19).

(19) I-ba-ra- i- kiny- ith- iir-i-e njoka
 F-SA₂-PST_Y- REFL- step on- CRC- PFV-IC-FV 9.snake
 ‘They coerced themselves to step on the snake.’

The coercer and the direct object cannot be co-indexed, (20a). Note that this sentence is grammatical on the reading where the coercer and the causee are co-indexed, (20).

(20) John n-a-ra- i- ring- ith- iir-i-e Maria
 1.John F-SA₁-PST_Y- REFL- hit- CRC- PFV-IC-FV 1.Maria

- a. *John coerced Maria to hit himself. (so that he could get a relieve from the choking experience)
 b. ✓John coerced himself to hit Maria.

And neither can the causee and the direct object be co-indexed, (21a). Again note the sentence is grammatical on the co-indexation of the coercer and the causee, (21b).

(21) Mû-borisi n-a-ra- i- ring- ith- iir-i-e mw-amba
 1-police F-SA₁-PST_Y- REFL- hit- CRC- PFV-IC-FV 1-thief

- a. *The policeman coerced the thief_i to hit himself_i.
 b. ✓The policeman coerced himself to the thief.

We see the limitation on co-indexation even in a clause with four arguments: one pre-verbally (the coercer) and three post-verbally (applied, causee, direct object). In this scenario, the only possible co-indexation is between the coercer and the applied argument, (22a). The coercer cannot be co-indexed

with the embedded external argument, the causee, (22b).

- (22) I-ba-ra- **î-** bog- **ith-** **î-** îr-i-e a-ruti wîîra nkû
 F-SA₂-PST_Y-REFL- tie- CRC- APL- PFV-IC-FV 2-do 9.work 10.firewood
- a. They_i coerced the workers to tie firewood for themselves_i.
 b. *They_i coerced themselves_i to tie firewood for the workers.

And neither can the coercer be co-indexed with the direct object, (23a). Note that this sentence allows co-indexation of the coercer and the applied argument, (23b).

- (23) I-ba-ra- **î-** munt- **ith-** **î-** îr-i-e ndogita tw-ana
 F-SA₂-PST_Y-REFL- inject- CRC- APL- PFV-IC-FV 1.doctor 13-child
- a. *They_i coerced the doctor to inject themselves_i for the children.
 b. ✓They_i coerced the doctor to inject children for themselves_i.

Other co-indexations are also impossible. The causee and the applied argument cannot be co-indexed, (24).

- (24) I-ba-ra- **î-** bog- **ith-** **î-** îr-i-e a-ruti wîîra nkû
 F-SA₂-PST_Y-REFL- tie- CRC- APL- PFV-IC-FV 2-do 9.work 10.firewood
 *‘They coerced the workers_i to tie firewood for themselves_i.’

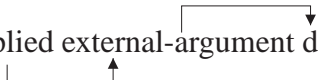
The causee and the direct object also cannot be co-indexed, (25a). This sentence allows the reading where the coercer and the applied are co-indexed, (25b).

- (25) Ndogita n-a- **î-** thamb- **ith-** **î-** îr-i-e John a-jie
 1.doctor F-SA₁-REFL- wash- CRC- APL- PFV-IC-FV 1.John 2-patient
 bara ba-ngî
 2-that 2-other
- a. *The doctor coerced John_i to wash himself_i for the benefit of other patients.
 b. ✓The doctor_i coerced John to wash the other patients for himself_i.

Finally co-indexation is impossible between the direct object and the applied argument, (26a), although the very same sentence allows co-indexation between the coercer and the applied argument, (26b).

- (26) I-ba-ra- **î-** bog- **ith-** **î-** îr-i-e tw-ana tû-kurû
 F-SA₂-PST_Y- REFL- tie- CRC- APL- PFV-IC-FV 13-child 13-dog
- a. *They coerced the children to tie the puppies_i for themselves_i (so that the puppies are not bitten by the others).
- b. They_i coerced the children to tie the puppies for themselves_i.

To summarize the binding patterns, when there are three arguments - the external argument, the applied argument, and the direct object, only two co-indexations are possible: external argument and applied argument, and external argument and direct object.

- (27) applied external-argument direct-object


When there is a coercer and no applied argument in a sentence, only the coercer and the external argument (causee) can be co-indexed.

- (28) coercer external-argument direct-object


When there is a coercer and an applied argument in a sentence, only the coercer and the applied argument can be co-indexed.

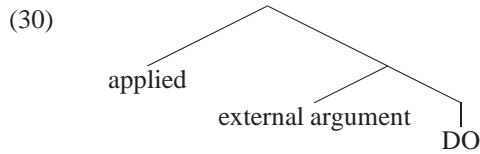
- (29) coercer applied external-argument direct-object


These data present a puzzle. Why is co-indexation severely constrained when there is a coercer argument in the structure? We can resolve this puzzle if:

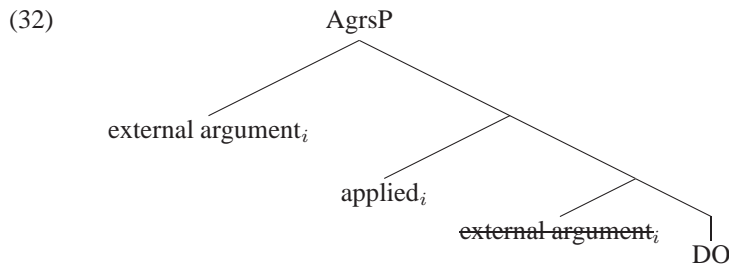
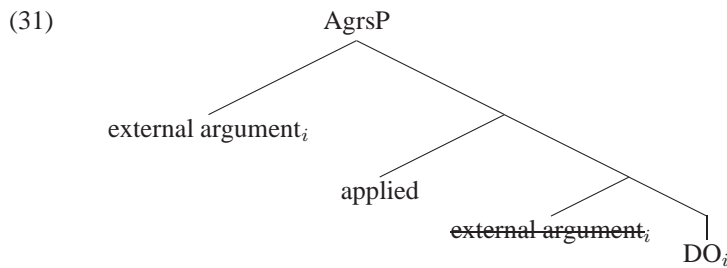
- We make some assumption about the hierarchy of merge of arguments
- We make some assumption about the lexical requirements of the REFLEXIVE
- We assume that binding is subject to relativized minimality (Rizzi (1990))

Let us make the first and the second assumptions precise. Suppose the hierarchy of merge of the arguments is as in (30): the applied argument merges higher than the external argument which in turn merges higher than the direct

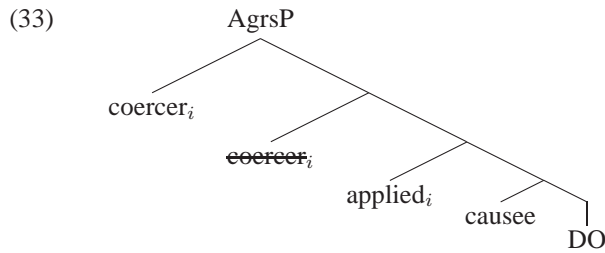
object. (We will argue in detail for this hierarchy of merge in chapter 6 when we look at binding facts with the reciprocal morpheme.)



Suppose also that the REFLEXIVE is a subject oriented anaphor: it must be bound from a subject position. Then we get the binding facts in applicatives without COERCE. The external argument can bind the direct object via its trace when it has moved to the subject position, (31) or the external argument can bind the applied argument when in subject position, (31).



Consider next the case with four arguments. Let us assume that the coerker is the highest argument, as in (33) (Again we will argue in detail for this hierarchy of merge in chapter 6 when we look at binding facts with the reciprocal morpheme). In contexts with the coerker, it is the coerker that moves to the subject position. The causee therefore never becomes a subject and thus will never be a binder by our assumptions.



If we combine our hierarchical hypothesis and the two other assumptions above - that the REFLEXIVE must be bound to a subject and that binding is subject to relativized minimality we capture the fact that (i) in contexts with coerce but no applicative, co-indexation is only possible between the coercer and the causee (ii) that with three post-verbal arguments (applied, causee, direct object), the only co-indexation possible is between the coercer and the applied argument.

Let us turn to the linear position of the REFLEXIVE in the sequence of prefixes. In the example in (34), the REFLEXIVE follows the tense marker *ra*, just as we saw with the OBJECT MARKER.

- (34) N-î- **ra**- î- kiny-ir-e
 F-SA₉- PST_Y- REFL- step on-PFV-FV
 ‘It stepped on itself.’

This brings us to the following ordering of prefixes, (35).

- (35) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE- { OBJECT MARKER
 | REFLEXIVE }

But what about the REFLEXIVE and OBJECT MARKER? What is the relative ordering of the two morphemes? The OBJECT MARKER and REFLEXIVE only very rarely co-occur in Kîîtharaka. There seems to be only one construction where the two prefixes can co-occur, and here the OBJECT MARKER precedes REFLEXIVE.

- (36) a. A-kû- **ba**- î- kum- îr- i-a
 SA₁-T- OM₂- REFL- proud- APL- IC-FV
 ‘S/he has been proud to the detriment of them.’
- b. *A-kû- î- **ba**- kum- îr- i-a
 SA₁-T- REFL- OM₂- proud- APL- IC-FV

The ordering of the OBJECT MARKER and the REFLEXIVE above is not unique to Kĩĩtharaka. My own fieldwork on Kikuyu, Kiambu, Kamba and Tigania, Bantu languages related to Kĩĩtharaka revealed the same pattern: the OBJECT MARKER precedes REFLEXIVE. In fact this might be part of a larger cross-Bantu pattern. Buell (2005:pg. 41) attributes to Thilo Schadeberg the observation that in Bantu languages allowing co-occurrence of OBJECT MARKER and REFLEXIVE, it is the reflexive that appears closer to the root. We can therefore expand our ordering of prefixes as in (37).

- (37) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE- OBJECT MARKER- REFLEXIVE-V

The order with the six prefixes in (37) can actually be produced on a single verb, in a yes/no question, (38).

- (38) Maria n- a- ti- ra- ba- î- kum-îr-i-a kana
 1.Maria F- sa₁- NEG- TENSE- OM₂- REFL- proud-APL-IC-FV Q
 ‘Is it the case that Maria was not proud to the detriment of them?’

(The first person singular object prefix which is made up of only a consonant appears closer to the root than REFLEXIVE. This suggests that we might actually want to refine our order of prefixes above to (39).

- (39) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE- OBJECT MARKER- REFLEXIVE-OM (first person)-V.

In this chapter, I will concentrate on the order in (35) since the system I develop can easily encompass the case with one pronoun appearing after the REFLEXIVE.)

In the next section, we turn to the theoretical options available for the merge of the prefixes.

3.2 The position of prefixes: the theoretical options

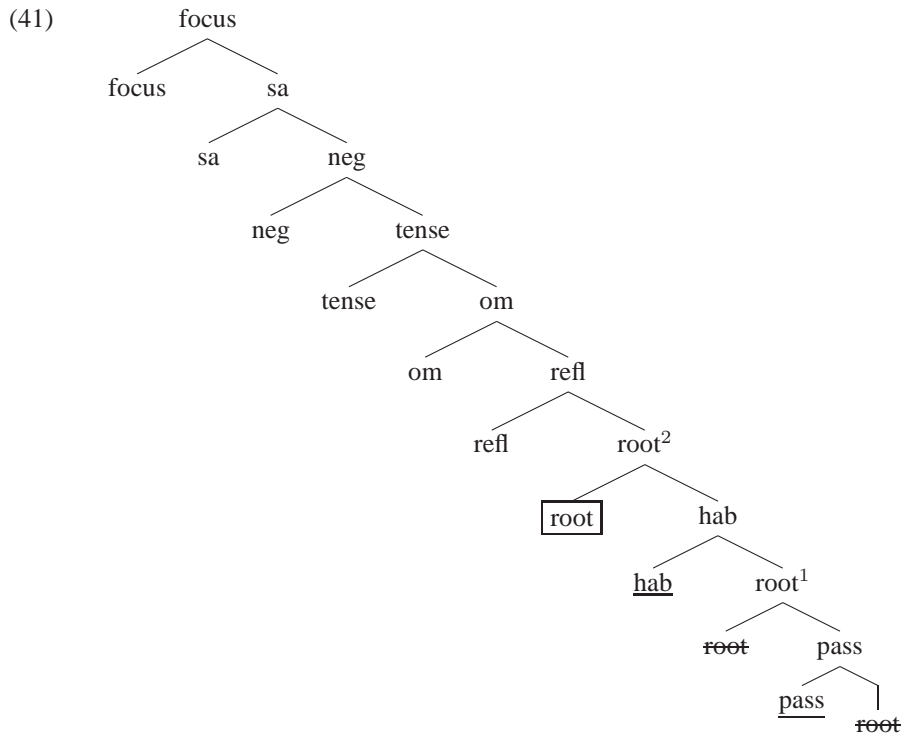
The six prefixes above precede the root, which in turn precedes all the suffixes, (40).

- (40) FOCUS MARKER- SUBJECT AGREEMENT- NEGATION- TENSE- OBJECT MARKER- REFLEXIVE- verb root- suffixes

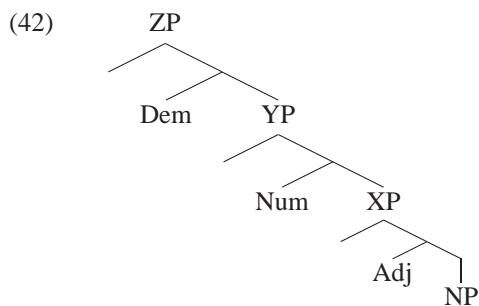
Given their position immediately preceding the root, and given our theory where movements target a sub-tree containing the verb, it must be the case that whenever, and wherever the prefixes merge, they merge in the left to right scopal order- if the prefixes merged in any other order, the correct surface order would be impossible to achieve since any disruption of the scopal order is sanctioned only if the root has moved past the affixes. In light of this observation, lets us first consider the options that will generate the right surface form given our theoretical constraint.

First given their position immediately preceding the root and all the suffixes, it is tempting to think that once the root has moved above the highest suffix, so far the HABITUAL, the prefixes are merged on top of the constituent containing the root and the suffixes in their left to right order, the prefix closest to the root (the REFLEXIVE) being the lowest, and the prefix furthest from the root (the FOCUS MARKER) being the highest. Going this way is particularly tempting because part of the ordering of the prefixes conforms to the left to right hierarchy of functional projections familiar from other languages: the focus projection occurs in the left periphery as it is in Italian (cf. Rizzi (1997)), Ngungbe (Aboh (2004)), Kikuyu (Clements (1984), Schwarz (2003)); the ordering subj AGR > NEG > tense > obj AGR is similar to the ordering established by (Belletti 1990:p.g 35) updating an earlier version of Pollock (1989).

To illustrate a derivation, let us consider a scenario with just two of the suffixes of the highest cyclic zone, the HABITUAL, and the PASSIVE. The root would cycle across the two suffixes, and the prefixes would merge in their left to right scopal order, (41). Let us call this option *all prefixes high option*.

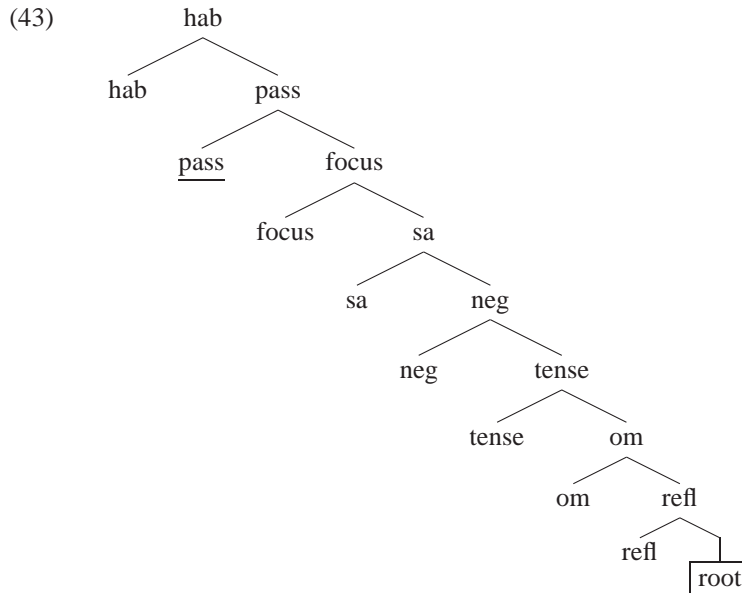


The pattern in (41), with all the prefixes higher than the verb root would resemble the scenario in the noun phrase when all the nominal modifiers precede the noun. In the neutral order, these modifiers come in the order Dem-Num-Adj-N. Cinque (2005) takes this order to the base order, and the modifier closest to the noun scopes under a modifier that precedes it, (42).

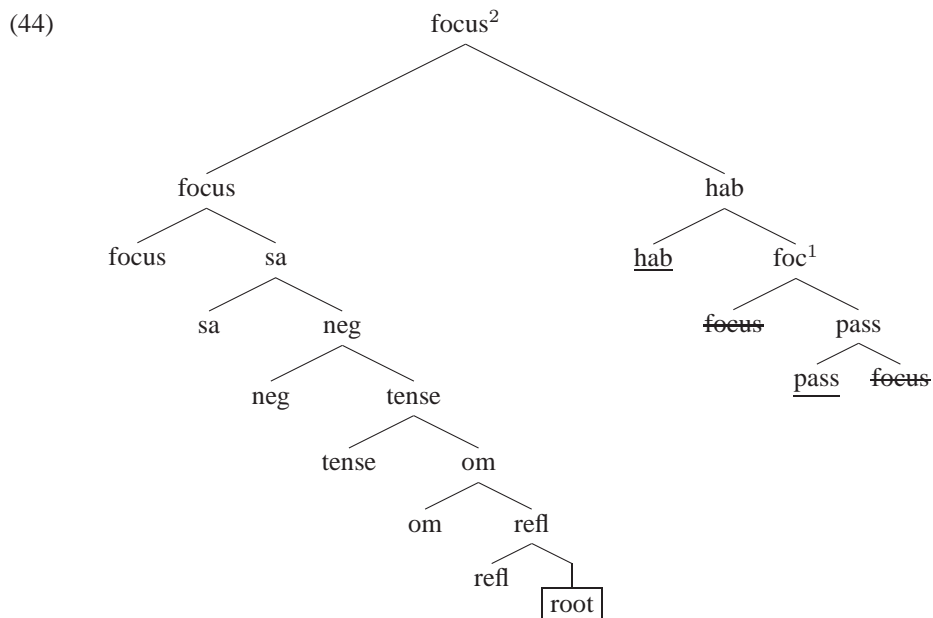


Note however that nothing in our theoretical system forces the derivation in (41). Our theoretical apparatus still allows the option where the prefixes merge in their left to right scopal order in a position lower than the suffixes immediately above the root, and the root, in the complement of the lowest prefix (REFLEXIVE), pied-pipes the prefixes to the position above the highest suffix, so far the HABITUAL. Let us call this option the *all prefixes low option*.

To illustrate this option, let us consider a scenario where there are just two suffixes: the HABITUAL and PASSIVE. The base order would be as in (43).



To get the surface order, the constituent containing all the prefixes (focus) would be pied-piped by the root to the position above the HABITUAL. This derivation is illustrated in (44).



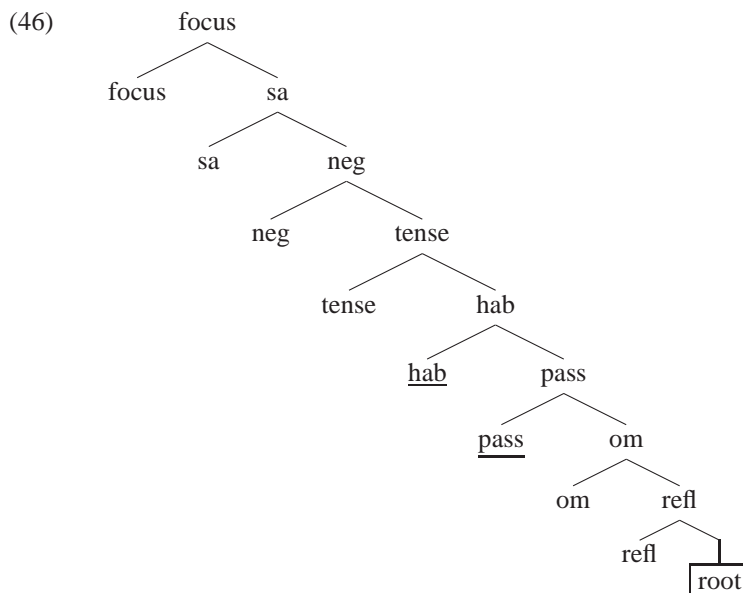
This type of derivation would resemble the “picture of whom” type of pied-piping: the *wh*-phrase pied-pipes other material while in the comple-

ment position. ‘Picture of whom’ pied-piping is more restricted, (45a), in contrast to the derivation where the *wh*-phrase pied-pipes material while in the specifier position, (45b).

- (45) a. A picture of whom did you see on the wall?
b. Whose picture did you see on the wall?

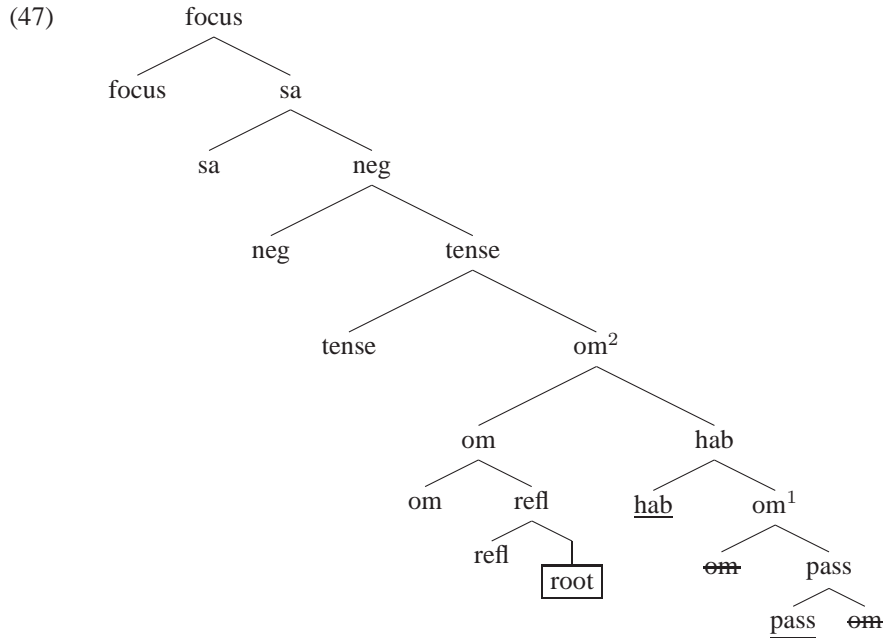
Let us examine a third alternative. It is possible to generate some of the prefixes very low, next to the root, and the other prefixes high in the clause, above the *HABITUAL*. There are several combinations of this two way split one could imagine here. One prefix could merge above the *HABITUAL*, and 5 below the *HABITUAL* close the root, and vice versa (1 below the *HABITUAL* and 5 above) (=2 combinations). Two prefixes could merge above the *HABITUAL*, and four below and vice versa (=2). Three prefixes could merge above the *HABITUAL* and three below (=1). This gives a total of 5 combinations. Let us illustrate the option where four prefixes are above the *HABITUAL* and two of them below the *HABITUAL* as it this will be relevant later. We baptize this option *4 over 2 option*.

To show precisely how this option will work, let us consider a scenario with just two of the morphemes of the highest cyclic zone - the *HABITUAL* and the *PASSIVE*. This base order is illustrated in (46). The *OBJECT MARKER* and the *REFLEXIVE* merge below the *PASSIVE*, and the other prefixes merge above the *HABITUAL* in their left to right scopal order.



To get the surface order, the root would pied-pipe the *OBJECT MARKER* and the *REFLEXIVE* while in the complement position of *REFLEXIVE* to the position

above the HABITUAL, then the other four prefixes would merge in their left to right scopal order. This derivation is illustrated in (47).



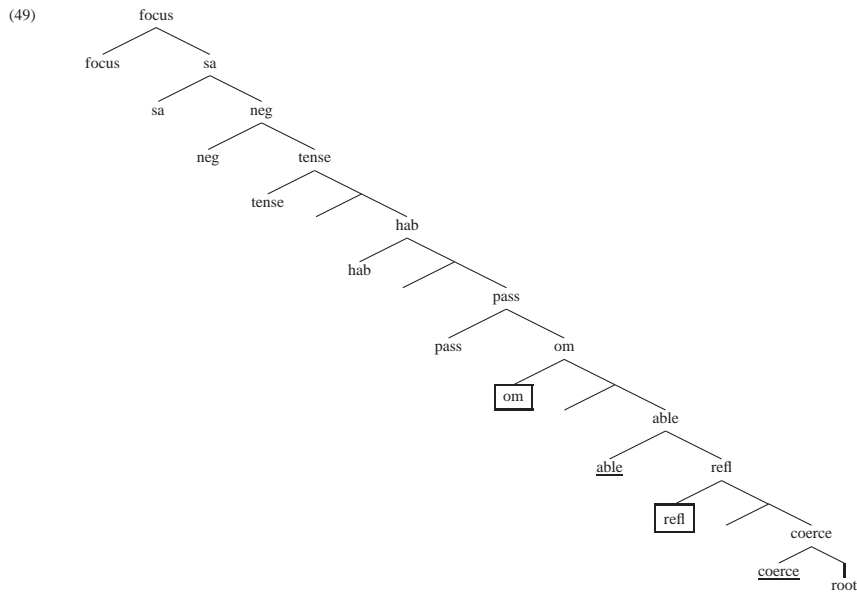
There is also a slight variant of the above alternative that will generate the right surface order: interspersing the prefixes that merge low with a zone of suffixes where the root undergoes roll-up movement. The two low prefixes therefore don't have to merge immediately above the root. Let us call this option *the spreading option*. To illustrate, consider a case where there are four suffixes: HABITUAL, PASSIVE, ABLE and COERCE. Recall that the scopal order of the four suffixes is as in (48a), but the surface order is as shown in (48b). The surface order arises the rolling up the root past COERCE and ABLE, and root+COERCE+ABLE cycling across PASSIVE and HABITUAL.

- (48) a. HABITUAL > PASSIVE > ABLE > COERCE
 b. COERCE < ABLE < HABITUAL < PASSIVE

ABLE and COERCE therefore form a roll-up juncture in the derivation: the root plus COERCE moves around ABLE to give the order root-COERCE-ABLE.

The following merge scenario is now imaginable: the FOCUS MARKER, SUBJECT AGREEMENT, NEGATION, and TENSE merge above the HABITUAL, the OBJECT MARKER merges above ABLE, and the REFLEXIVE above COERCE, as shown in (49).

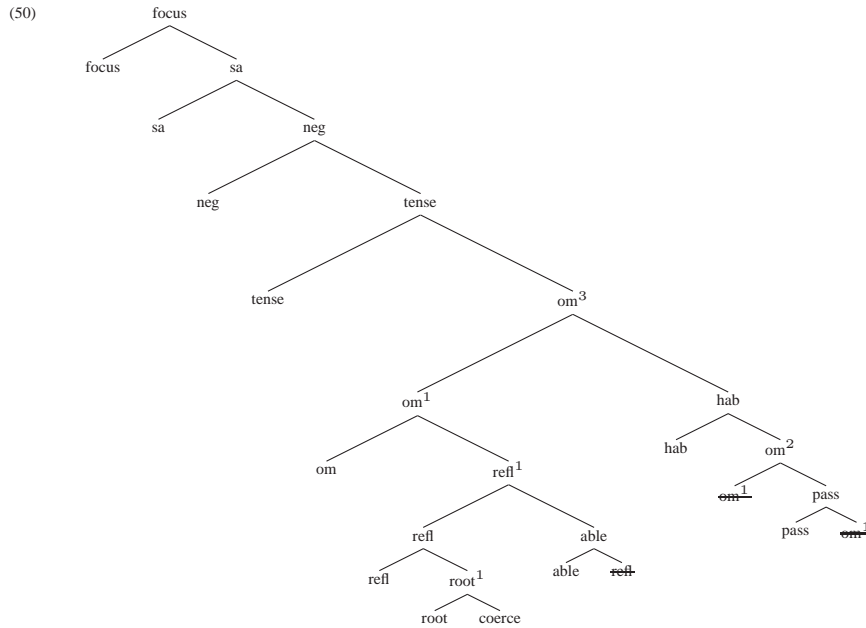
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The surface order would then arise in the following steps.

- The root moves immediately above COERCE. This gives the order: REFLEXIVE-ROOT-COERCE.
- The constituent immediately dominating the REFLEXIVE moves immediately above ABLE giving the order OBJECT MARKER-REFLEXIVE-ROOT-COERCE-ABLE.
- The constituent immediately dominating OBJECT MARKER moves cyclically past PASSIVE and HABITUAL: OBJECT MARKER-REFLEXIVE-ROOT-COERCE-ABLE-HABITUAL-PERFECT.
- The four prefixes are merged above HABITUAL in their left to right scopal order: FOCUS MARKER-SUBJECT AGREEMENT-NEGATION-TENSE-OBJECT MARKER-REFLEXIVE-ROOT-COERCE-ABLE-HABITUAL-PASSIVE

This structure is given in (50).



Since this and the preceding derivation share the property that the OBJECT MARKER and the REFLEXIVE start their life lower than the HABITUAL, I will subsume both of them under the *4 over 2 option*. This concludes the discussion on a sample of the alternatives doable within our current theory.

Let us drift a bit from our restrictive theory and imagine how the world would look like if we allowed at least some of the prefixes to move independent of the root. We will only look at one scenario here because this might have some consequence for the analysis of facts regarding a class of prefixes.

This scenario that we examine is like the *4 over 2 option*: four prefixes (the FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) merge above the HABITUAL, and the other two (the REFLEXIVE and the OBJECT MARKER) below the HABITUAL immediately above the root. The difference with the previous scenario however is that instead of moving the two low prefixes with the root, we allow them to move alone. The highest prefixes are therefore constrained as before: if they can move, they can only do so in the company of the root. Let us call this option the *2 low unconstrained option*.

To illustrate the plausibility of this alternative, I will demonstrate that the OBJECT MARKER, and by extension the REFLEXIVE behave like clitics and therefore have the potential to undergo clitic dislocation. I will compare the properties of these two clitic-like elements with SUBJECT AGREEMENT which seems to behave like an agreement marker.

The OBJECT MARKER and SUBJECT AGREEMENT differ from one another in one trivial way - their obligatoriness in certain constructions. SUBJECT AGREEMENT

is obligatory in every sentence that is tensed and has a subject while the OBJECT MARKER is not obligatory in all tensed clauses that have an object. This is the first indication that SUBJECT AGREEMENT and the OBJECT MARKER cannot be reduced to one thing.

There is a second context where OBJECT MARKER and SUBJECT AGREEMENT differ: in the auxiliary construction. In this construction, there must be two copies of SUBJECT AGREEMENT and both copies agree with the same DP, (51).

- (51) Maria n- a- îg-ag-u-a a- kur-îît-e ntundu
₁.Maria F- SA₁- be-HAB-VR-FV SA₁- comb-PFC-FV ₁₀.hair
 ‘Maria usually has combed hair.’

In contrast, the OBJECT MARKER, (52a), and the REFLEXIVE, (52b) cannot copy.

- (52) a. Maria n-a- (*ci)- îg-ag-u-a a- ci- kur-îît-e
₁.Maria F-SA₁- OM₁₀- be-HAB-VR-FV SA₁- OM₁₀- comb-PFC-FV
 ‘Maria usually has combed it.’
- b. Maria n-a- (*î)- îg-ag-u-a a- î- kur-îît-e
₁.Maria F-SA₁- REFL- be-HAB-VR-FV SA₁- REFL- comb-PFC-FV
 ‘Maria usually has combed herself.’

The above contrast between subject agreement on the one hand, and the OBJECT MARKER and the REFLEXIVE on the other is another indication that the three morphemes cannot be reduced to the same thing.

Let us turn to a third context where SUBJECT AGREEMENT and the OBJECT MARKER differ - dislocation. Object DPs in Kîîtharaka can undergo dislocation to the beginning of the sentence or to the far right of the sentence, with a pause separating the dislocated DP and the following or preceding constituent. When the dislocated object DP is animate, it requires to be co-indexed with an OBJECT MARKER, (53).

- (53) a. Ka-ana i-ba- *(ga)- tûm-ir-e
₁₂-child F-SA₂- OM₁₂- send-PFV-FV
 ‘The child, they sent it.’
- b. I-ba- *(ga)- tûm-ir-e ka-ana
 F-SA₂- OM₁₂- send-PFV-FV ₁₂-child
 ‘They sent it, the child.’

in Kîtharaka.⁴ The OBJECT MARKER (and by extension the REFLEXIVE) could therefore be outside the domain of universal 20 - a domain where only extractions containing the head are possible.

Let us summarize the theoretical options doable within our current theoretical dispensation. The theory allows base-generating all the prefixes above the HABITUAL, the highest suffix so far, in their left to right scopal order (*all prefixes high option*). The theory also allows base-generating all the prefixes low in the structure in a position immediately above the root, in their left to right scopal order (*all prefixes low option*). Third, four suffixes (FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) can be merged above the HABITUAL in their left to right scopal order, and the other two (OBJECT MARKER, REFLEXIVE) immediately above the root (*4 over 2 option*). Finally, four suffixes (FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) can be merged above HABITUAL in their left to right scopal order, and the other two (OBJECT MARKER, REFLEXIVE) interspersed with a zone of suffixes where the root moves in a roll-up fashion (the *spreading option*). We suggested to subsume the last two options under *4 over 2 option*.

In the following section, we turn to empirical facts in order to see which alternative works. We will show that the option allowing all the prefixes to merge below the suffixes fails to capture scope facts and verbal reduplication patterns. We will also show that the option that generates all the prefixes above HABITUAL fails to account for some of the low clausal properties of the OBJECT MARKER and the REFLEXIVE, and the distribution of prefixes in the auxiliary construction. We will therefore argue that the option allowing merging TENSE and the prefixes that precede it above HABITUAL, while merging the OBJECT MARKER and the REFLEXIVE below (some) suffixes (the *4 over 2 option*) might be the right one.

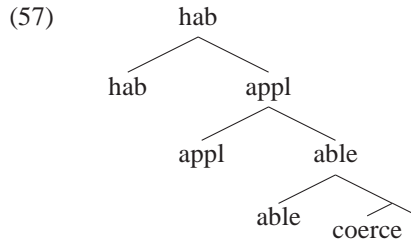
3.3 The empirical side

3.3.1 The scopes

In order to establish the position of some of the prefixes with respect to the suffixes, we will first consider the scopes between NEGATION and some of the suffixes, the only scope that seems to be testable. Here we will only consider the scopes between NEGATION and a sample of the suffixes, whose hierarchical

⁴In Spanish for example, a direct object clitic associated with the main verb can be found preceding a restructuring verb, far away from the main verb (see the data in Aissen and Perlmutter (1983)). The direct object clitic arguably moves without the main verb.

order is given in (57). We will start with the lowest suffix in (57), and move up the tree.



Consider first NEGATION and the COERCE causative. If negation scopes below COERCE, we expect it to negate the coerced event (58a). If on the other hand NEGATION scopes over COERCE, it is the coercing event that is negated, (58b).

- (58) a. [X coerce [Y not to V]]
 b. [X not coerce [Y to V]]

The facts show that NEGATION scopes over coercion, (59a) not the coerced event, (59b).

- (59) John a- **ti-** ra-ring- **ith-** i-a a-ciari mpî
 1.John SA₁-NEG- PST_Y-hit- CRC- IC-FV 2-parent 10.palm

- a. ✓ John did not coerce the parents to clap their hands: they did so at their own will.
 b. *John coerced the parents not to clap their hands (the parents have a bad habit of clapping for every Tom Dick and Harry).

Since scopes translate into c-command, the facts in (59) suggest that NEGATION merges in a position above COERCE. This fact already rules out the *all prefixes low option*, an option that takes all the suffixes to merge very low in the structure, in a position immediately above the root.

Consider next NEGATION and ABLE. If NEGATION merges lower than ABLE, we expect a reading where it is easy not to carry out an event, (60a). In contrast, if NEGATION scopes over ABLE we expect there to be some difficulty to carry out some event, (60b).

- (60) a. [it is easy [not to V]]
 b. [not easy [to V]]

Let us turn to the facts. They show that negation scopes over ABLE, (61a), not the event, (61b). NEGATION therefore merges in a position higher than ABLE.

- (61) Renti î- ti- kû-rî- *îk*- a
 9.rent 9.SA- NEG- T-pay- ABL- FV
- a. ✓The rent is not easy to pay: It is too much I couldn't pay; I payed but used up all the money I had.
- b. *It is easy not to pay rent (if you don't have a reminder letter).

NEGATION also scopes over the APPLICATIVE. Let us first consider the interaction between NEGATION and an applied argument of the reason type. If NEGATION scopes below the applicative, we expect it to negate the event and get a reading where someone didn't do some event because of some reason, (62a). On the other hand, if NEGATION scopes over the reason applicative, the reading is that someone carried out an event, but not because of some reason, (62b).

- (62) a. [because of some reason [X not V]]
 b. [not because of some reason [X V-ed]]

As the data shows, NEGATION scopes over APPLICATIVE, (63), confirming again it merges higher than APPLICATIVE.

- (63) Maria a- ti- ra-nyu- *îr*- a û-kî kî-eba
 1.Maria SA₁- NEG- PST_Y-drink- APL- FV 14-beer 7-sorrow
- a. ✓Maria drunk beer but not because she was sorrowful (she drinks beer when she is happy)
- b. *Maria didn't drink beer and the reason was that she was sorrowful.

The same point can be demonstrated with a benefactive applicative. If NEGATION scopes below the APPLICATIVE, it negates the event, and we get the reading where for X's benefit, an event was not carried out, (64a). On the other hand, if the scope of NEGATION is over the applied argument, the reading is that it is not to X's benefit that an event was carried out, (64b).

- (64) a. [for X's benefit [not V]]
 b. [not for X's benefit [V]]

The facts parallel those with a reason applicative: NEGATION scopes over the APPLICATIVE, (65).

- (65) Maria a- **ti-** ra-rug- **îr-** a Björn Nyama
 1.Maria 1.SA- NEG- PST_Y-cook- APL- FV 1.Björn 10.meat
- a. ✓ Maria cooked meat but not for Björn.
 b. *Maria didn't cook meat for the benefit of Björn: Björn is a vegetarian.

Let us consider the highest suffix: the HABITUAL. If NEGATION scopes below the HABITUAL, the expected reading is someone has a habit of not carrying out some event, (66a). If on the other hand NEGATION scopes over HABITUAL, the reading is that someone has no habit of carrying out some event, (66b).

- (66) a. [X has a habit [of not V-ing]]
 b. [X has no habit [of V-ing]]

The scopes are not clear here, partly because its hard to define what forms an habit. Both the translation in (67a), where negation scopes over the HABITUAL and (67b), where NEGATION scopes over the event seem to us to be semantically equivalent.

- (67) John a- **ti-** enj- **ag-** a
 1.John SA₁- NEG- shave- HAB- FV
- a. John has no habit of shaving.
 b. John has a habit of not shaving.

Note however that the facts are consistent with NEGATION merging above the HABITUAL. Note furthermore, that our theory would never allow NEGATION to merge between the HABITUAL and APPLICATIVE: Since the root moves cyclically past APPLICATIVE and HABITUAL (chapter 2), there would be no way to get NEGATION to precede the habitual and be prefixal. The final derivation would have NEGATION between HABITUAL and APPLICATIVE. We will take it therefore that NEGATION merges above the HABITUAL: the data facts are consistent with this choice, and the theory favours this option (see however Appendix A for some complications with prefix doubling).

This finding that NEGATION scopes over all the suffixes below and including the HABITUAL has important consequences for the analysis of the other prefixes

preceding NEGATION - the FOCUS MARKER and SUBJECT AGREEMENT. Since NEGATION merges above the HABITUAL the two prefixes preceding NEGATION must also merge above NEGATION in their left to right order by the mechanics of the theory: given that affixes are disallowed to move independent of the root, the two affixes would be impossible to linearize if they merged below NEGATION in whatever order, or above NEGATION in their mirror order. The two prefixes must therefore merge above NEGATION in their left to right scopal order.

There is actually independent evidence from word order which confirms that the FOCUS MARKER is higher than NEGATION. The FOCUS MARKER and NEGATION do not co-occur on the same verb in a declarative sentence. However the two prefixes can co-occur in a declarative sentence in the BE auxiliary construction, a mono-clausal context, and here the FOCUS MARKER must appear on BE and NEGATION on V, (68a). The order of the two prefixes cannot be reversed, (68b).

- (68) a. Maria **n-** a-îg-ag-u-a a- **ta-** thom-eet-e
 ₁.Maria F- SA₁-be-HAB-VR-FV SA₁- NEG- read-PFC-FV
 ‘Maria usually has not read.’
- b. *Maria a- **ti-** îg-ag-u-a **n-** a-thom-eet-e
 ₁.Maria SA₁- NEG- be-HAB-VR-FV F- SA₁-read-PFC-FV

By our reasoning that whatever affixes on AUX is higher than whatever affixes on V, the FOCUS MARKER must be higher than NEGATION.

Summarizing so far, it seems very plausible that the three highest prefixes: FOCUS MARKER, SUBJECT AGREEMENT and NEGATION merge above HABITUAL in their left to right scopal order.

Let us now turn to the prefix immediately following NEGATION - TENSE. Where is it merged? It is a cross-linguistic pattern (see Cinque (1999) for a survey) that most tenses are higher than aspect. In line with this cross-linguistic evidence, we will assume that TENSE is merged above HABITUAL.

This now leaves us with the two prefixes - the OBJECT MARKER and the REFLEXIVE. Do these merge above the HABITUAL like the other prefixes or do they merge below the HABITUAL? There are two pieces of data that suggest that the OBJECT MARKER and the REFLEXIVE could start low in the structure. The first which I have already shown is that the OBJECT MARKER and the REFLEXIVE “saturate” particular theta roles. They can “saturate” a patient theta role usually associated with direct objects, they can also “saturate” a benefactive role, or a causee theta role. Since direct objects, applied objects and causees merge in different positions in the syntax and in a theta domain, a domain which is usually considered to be the lowest in the clause, it also highly plausible that

the OBJECT MARKER and the REFLEXIVE start in this low domain.

The second evidence comes from the auxiliary construction. Consider the sentences in (69), which contain the HABITUAL and the REFLEXIVE. On a single verb, the REFLEXIVE precedes the HABITUAL, (69a), but in the auxiliary construction, the REFLEXIVE occurs on V, and the HABITUAL on AUX, (69b).

- (69) a. Maria n-a- *î-* kur- **ag-** a
₁.Maria F-SA₁- REFL- comb- HAB- FV
 ‘Maria usually combs herself.’
- b. Maria n-a-*îg-* **ag-** u-a a- *î-* kur-*îît-e*
₁.Maria F-SA₁-be- HAB- VR-FV SA₁- REFL- comb-PFC-FV
 ‘Maria usually has combed herself.’

We see the same pattern with the OBJECT MARKER. On a single verb, the OBJECT MARKER precedes the HABITUAL, (70a), but in AUX, the OBJECT MARKER occurs on V, and the HABITUAL occurs on AUX, (70b).

- (70) a. Maria n-a- *ba-* kur- **ag-** a
₁.Maria F-SA₁- OM₂- comb- HAB- FV
 ‘Maria usually combs them.’
- b. Maria n-a-*îg-* **ag-** u-a a- *ba-* kur-*îît-e*
₁.Maria F-SA₁-be- HAB- VR-FV SA₁- OM₂- comb-PFC-FV
 ‘Maria usually has combed them.’

The fact that the OBJECT MARKER and the REFLEXIVE occur on V in the auxiliary construction must mean they are low, given our prior argumentation that whatever affix appears on V is lower than whatever appears on AUX. The appearance of these two prefixes low on V is again what we expect given they merge low in the clause to begin with (see Appendix A for details).

To sum up, it seems plausible that there is a split in the prefixes. Four of them (FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) merge above the HABITUAL in a left to right scopal fashion, while two of them merge below the HABITUAL in a left to right scopal order. This is the *4 over 2 option*.

In the next section we turn to verbal reduplication. We will show that verbal reduplication also rules out the option where all the prefixes merge below the HABITUAL. In addition, we will demonstrate that the verbal reduplication patterns suggest that the OBJECT MARKER and the REFLEXIVE merge below the HABITUAL making the *all prefixes high option* an unlikely alternative for the

merge of prefixes.

3.3.2 Verbal reduplication

Verbal reduplications in Kîtharaka convey the readings typically conveyed by the ERRATIC morpheme: an irregular reading, a quick reading and a comparative reading.

The example in (71) has the ERRATIC suffix. This sentence can have the three readings stated above, an irregular reading, (71a), a quick reading with a bad result, (71b), and a comparative reading, (71c).

- (71) Maria n-a-ciat- **ang-** ir-e
 1.Maria F-SA₁-sweep- ERR- PFV-FV
- a. Maria swept at 7.am, 7.45 am and at 9.am.
 - b. Maria swept within a short time and with a bad result (the sweeping was not done well).
 - c. Maria swept for a longer period of time than before.

We get exactly the three readings above in a context with verbal reduplication, (72). In this example, the verb *ciata* ‘sweep’ has been reduplicated.

- (72) Maria n-a- **ciata-** ciat-ir-e
 1.Maria F-SA₁- sweep- sweep-PFV-FV
- a. Maria swept at 7.am, 7.45 am and at 9.am.
 - b. Maria swept within a short time and with a bad result (the sweeping was not done well).
 - c. Maria swept for a longer period of time than before.

The ERRATIC is suffixal while the verbal reduplicant is prefixal. This makes it seductive to think of verbal reduplication as a copy of ERRATIC or vice versa, but I will not go into these details here.

Let us turn to the properties of the verbal reduplication construction. The verbal reduplication construction in Kîtharaka is subject to two main restrictions (i) the reduplicated part, which is prefixal has to be bi-syllabic (ii) the root has to be fully exploited first to meet the bi-syllabic requirement before other resources e.g. suffixation are drawn on (maximize root in OT parlance).

To illustrate these restrictions, consider the verb *thûngûtha*, ‘to jump’. Because this verb is clearly not bi-syllabic, it must be trimmed before it can be reduplicated. The reduplicated part is shown in (73a) in bold. We will call

this part the reduplicant in line with the tradition (see e.g. Hyman et al. (to appear), Odden (1996)). (73b) with the full form of the verb is ungrammatical. This violates the bi-syllabicity requirement.

- (73) a. a- kû- **thungu** thûngûtha
 SA₁- T- sleep jump
 ‘S/he jumped quickly.’
- b. *?a- kû- **thûngûtha** thûngûtha
 SA₁- T- jump jump
 ‘S/he jumped quickly.’

In (74), the final vowel *a* is used instead of the root internal *u* vowel of the verb *thûngûtha*. This form is ungrammatical because of (ii) above: maximize root first.

- (74) *a- kû- **thûnga** thûngûtha
 SA₁- T- jump jump
 ‘S/he jumped quickly.’

Because of the bi-syllabic requirement, and the requirement to utilize the root fully before using other resources, we will require roots that are mono-syllabic to check which suffixes can go on the reduplicant. There are a few of these. The results are the following:

- Suffixes below PERFECT occur in the reduplicant.
- Suffixes from PERFECT and above only marginally occur on the reduplicant.
- The FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE cannot occur in reduplicant.
- The OBJECT MARKER and the REFLEXIVE can occur in the reduplicant iff the root is made up of only a consonant.

Let us illustrate the patterns above starting with the suffixes. We consider only a few suffixes below (and including) the HABITUAL, namely COERCE, ABLE ERRATIC, and PERFECT. Recall that the scopal order of these suffixes is as in (75).

- (75) HABITUAL > PERFECT > ABLE > ERRATIC > COERCE

The three lowest suffixes COERCE, ERRATIC and ABLE duplicate with no hitch as shown in (76a), (76b) and (76c) respectively.

- (76) a. ta-**itha** ta-ithia ‘coerce to fetch water quickly’
 b. ta-**anga** ta-anga ‘fetch water quickly’
 c. ta-**îka** ta-îka ‘easy to fetch quickly’

The PERFECT, (77a) and the HABITUAL, (77b), when they occur in the reduplicant produce a marked sentence, (77).

- (77) a. ?rî-**îte** rî-îte ‘has paid irregularly’
 b. ?rî-**aga** rî-aga ‘be paying quickly’

Let us turn to reduplication with the prefixes. TENSE, and all the prefixes that precede it cannot be reduplicated. Thus the tense marker *kû* (and all the other tenses) cannot be reduplicated, (78).

- (78) *ba- **gû-** pa **gû-** pa
 SA₂- T- give T- give
 ‘They have given quickly.’

Negation cannot be reduplicated, (79).

- (79) *ba- **ti-** pa **ti-** pa
 SA₂- NEG- give NEG- give
 ‘They woun’t give quickly.’

The SUBJECT AGREEMENT cannot be reduplicated either.

- (80) *ba- pa **ba-** pe
 SA₂- pay SA₂- give
 ‘They give quickly.’

Reduplication of the focus marker is also impossible, (81). We should note however a complication with testing for FOCUS MARKER in the reduplicant. We need to insert SUBJECT AGREEMENT as well in the test context since the verb adjacent focus marker occurs only in contexts preceding SUBJECT AGREEMENT. Note however the addition of SUBJECT AGREEMENT to our test prefix is not likely to influence the result: since reduplication with only the prefix irrel-

evant to our test prefix (i.e. SUBJECT AGREEMENT) is already ungrammatical, the cumulative effects of this prefix and the test prefix is also expected to be ungrammatical.

- (81) *i- ba-pa i- ba-pe
 F- SA₂-give F- SA₂-give
 ‘They give quickly.’

Consider finally the two prefixes closest to the root: the OBJECT MARKER and the REFLEXIVE. These prefixes can occur in the reduplicant if the root is made up of only a consonant, as it is with the root *p-a* ‘give’ in (82).

- (82) a. î- pa î- pe ‘give yourself quickly’
 b. mû- pa mû- pe ‘give him/her quickly’

This restriction that only roots that are consonantal allow reduplication of the OBJECT MARKER and the REFLEXIVE has also been observed in Ndebele, a Southern Bantu language (Hyman et al. (to appear), Galen Sibanda (pc)). This restriction notwithstanding, there is still a contrast with the other four prefixes above: they cannot occur in the reduplicant even with this consonantal root, (81).

If the restriction on what can duplicate is structural, then the generalization seems to be that reduplication is never possible above the HABITUAL. This nicely captures the two way split in the six prefixes - four of them (FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) merge above the HABITUAL, and two of them (OBJECT MARKER and REFLEXIVE) below the HABITUAL.⁵

Let us summarize this section. The verbal reduplication patterns also suggest that there is a split in the prefixes, with four of them merging above the HABITUAL and two of them below the HABITUAL - the hierarchy of merge therefore is *4 over 2*.

In the next section we turn to the auxiliary construction for another potential argument for the left to right scope of prefixes and for non-contiguous merge positions for the prefixes.

3.3.3 Distribution of prefixes on multi-verbs

The auxiliary construction provides some additional evidence for the left to right scope of the prefixes as well as for the merge of the prefixes in a non-

⁵There is an obvious question why the OBJECT MARKER and the REFLEXIVE cannot duplicate on roots that are not consonantal. We do not have an answer for this at the moment.

contiguous fashion.

Consider first the distribution of the FOCUS MARKER the OBJECT MARKER and the REFLEXIVE in the auxiliary construction: the OBJECT MARKER and the REFLEXIVE must occur on V, and the focus marker on AUX, (83a). These suffixes cannot switch positions in AUX and V, (83b).

- (83) a. Maria **n-** a-îg-ag-u-a a- **ba- î-** kum-îr-îît-i-e
 1.Maria F-SA₁-be-HAB-VR-FV SA₁-OM₂-REFL-proud-APL-PFC-IC-FV
 ‘Maria usually has been proud to the detriment of them.’
- b. *Maria a- **ba- î-** îg-ag-u-a **n-** a- kum-îr-îît-i-e
 1.Maria SA₁-OM₂-REFL-be-HAB-VR-FV F- SA₁-proud-APL-PFC-IC-FV

This is evidence that the focus marker is higher than both the OBJECT MARKER and the REFLEXIVE by our reasoning that whatever affixes on AUX is higher than whatever affixes on V.

The high position of the FOCUS MARKER can also be established by restructuring contexts, contexts which allow long passivization. As with the auxiliary construction, the FOCUS MARKER must appear on the highest verbal element, (84).⁶

- (84) Mû-biira (✓**n-**)- û-ig-ag-u-a (***n-**)- û-ambî-îr-i-e (***i-**)-
 3-ball F- sa₃-be-HAB-VR-FV F- SA₃-begin-PFC-IC-FV F-
 gû-ceth-w-a
 SA₁₅-play-PAS-FV
 ‘The ball usually has been begun to be played.’

Again thinking of (84) derivationally, affixation on the verbs following the BE auxiliary must occur before affixation on AUX. Hence the focus marker must be higher than whatever affixes occur on the verbs following AUX.

The above facts transparently give us the hierarchy in (85), which is a left to right scopal order.

- (85) FOCUS MARKER > OBJECT MARKER > REFLEXIVE

⁶Unfortunately, the position of the OBJECT MARKER and REFLEXIVE cannot be directly established in a restructuring context because passive morphology does co-occur with either the OBJECT MARKER or the REFLEXIVE (cf. Harford (1992)). However the fact that co-occurrence is impossible might itself suggest that OBJECT MARKER and REFLEXIVE want to be on the verb where PASSIVE is found, which is the lowest verb.

There are certain complications with other prefixes i.e. SUBJECT AGREEMENT, TENSE and NEGATION in that they can double in the auxiliary construction sometimes under some conditions. We discuss these complications in Appendix A.

3.4 4 over 2

We have argued in this chapter that only one derivation operating within our theory will account for the facts with the prefixes: the derivation allowing four prefixes (FOCUS MARKER, SUBJECT AGREEMENT, NEGATION and TENSE) to merge above the HABITUAL in their left to right scopal order, and two others (OBJECT MARKER and REFLEXIVE) low in the clause below the HABITUAL but above the root in their left to right scopal order. The surface order on a single verb then arises when the root in the complement of the lowest prefix the REFLEXIVE pied-pipes the two prefixes to the position above the HABITUAL. The highest four prefixes are then merged in their left to right scopal order. There is also the possibility that the two low suffixes move alone, being clitics (*two low unconstrained option*), but we will go with the restrictive version moving the two prefixes above the HABITUAL with the root.

Chapter 4

The FV and PA

In this chapter we turn to the final vowel and the plural addressee. We start with a discussion of the distribution of these two suffixes, then we move on to where they are merged in the clausal hierarchy before finally showing that their surface positioning in the clausal hierarchy falls under the very mechanism that disrupts the base order in the noun phrase - the dragging movements that always have the head of the phrase in the moved chunk of syntactic structure.

We will start with a description of the final vowel and then move on to the plural addressee.

4.1 The distribution of the final vowel

4.1.1 Final vowels only in verbal contexts

Final vowels show up only in verbal contexts. These verbal contexts include verbs themselves, nominalized verbs and deverbal adjectives. Most other elements have a root internal vowel, not a final vowel in the technical sense.

We can distinguish final vowels and root internal vowels in two ways: (i) Final vowels are sensitive to particular syntactic properties, while root internal vowels are not (ii) Final vowels are separable from the root by some suffixes, but root internal vowels are not.

Let us illustrate how we identify the final vowel in deverbal adjectives using the above criteria. Deverbal adjectives systematically change the final vowel depending on whether the verb is transitive or not. Thus in (1), where the verb is intransitive, the final vowel must be *u*.

- (1) Mû-rango n-û-mû- komb- { *e | u }
 3-door F-ADJ₃-PREF- bend- FV
 ‘The door is bent.’

In (2), where the verb has been transitivity with the INNER CAUSATIVE, the final vowel must be *e*.

- (2) Mû-rango n-û-mû- komb- i- { e | *u }
 3-door F-ADJ₃-PREF- bend- IC- FV
 ‘The door is bent.’

The form of the final vowel is therefore determined by the syntactic feature [transitive] perhaps even more features, but we will not go into much detail. (We know that the forms in (1), and (2) are adjectives because of two reasons: (i) They take a complex agreement morpheme made up two bits: a first bit that sometimes resembles the verbal agreement, and a second bit that resembles the class prefix. Underived adjectives take exactly the same agreement. (ii) They do not take tense directly, they require the copula to do so. Underived adjectives, e.g. colour adjectives also require the copula before tense can be added.)

Let us examine the second type of evidence for the final vowel nature of *u* and *e*: we can find material intervening between the root and these vowels. In (3), the reversive intervenes between the root and *u*.

- (3) Mû-kanda n-û-mû- kund- ûk- { *e | u }
 3-rope F-ADJ₃-PREF- tie- REV- FV
 ‘The rope is untied (by self)’

In (5), the reversive which also in addition encodes transitivity intervenes between the root and *e*.

- (4) Mû-kanda n-û-mû- kund- ûr- { e | *u }
 3-door F-ADJ₃-PREF- tie- REV.TR- FV
 ‘The rope is untied (by someone)’

u and *e* are therefore final vowels.

Consider in this light, the situation with underived adjectives. There are around 12 of them, and I list them below (Note that for these forms to be used in any construction, they would require agreement prefixes. What I give in

the table below therefore are the bare forms, without the prefixes.)

underived adjectives	
ûgî	intelligent
îthî	raw
kubî	short
ega	good
raja	tall
cege	thin
nene	big
tune	red
nini	small
thongi	beautiful
jirû	black
jerû	white

Although these adjectives are a fairly small class, and plausibly all intransitive, they have five vowels (a, e, i, û, î) out of the seven vowels that Kîtharaka has (a, e, i, o, u, û, î). This is the first pointer that the vowels found in these adjectives are not of the type found in deverbal adjectives - it is hard to see which syntactic properly each of the final vowels would be sensitive to. Crucially no other suffix can intervene between the last vowel of the 12 adjectives and the preceding material. They therefore cannot be final vowels by definition.

Let us mention briefly the distribution of final vowels in deverbal nouns. The patterns are complicated, and we will mention just two patterns here. The final vowel *i* is used for agentive nominals, (5), and final vowel *o* for result nominals, (6).

- (5) mw- andîk- **i**
 1- write- FV
 ‘writer’ / ‘secretary’
- (6) mw- andîk- **o**
 3- write- FV
 ‘the writing’ (the result of writing)

The presence of *i* is therefore triggered by the syntactic feature [agent] (perhaps more features) and that of *o* by the syntactic feature [result] (perhaps more features).

The two final vowels above can be separated from the root. In (7), *o* is separated from the root by AN, a morpheme usually used as a reciprocal, and a human unspecific indefinite (someone), and by the APPLICATIVE.

- (7) n-gwat- **an** -**îr**- **o**
 9-hold- AN- APL- FV
 ‘agreement’

In (9), *i* is separated from the root by AN.

- (8) mû-gwat- **an**- **i**
 1-hold- AN- FV
 ‘sponsor’

In contrast to the pattern with these deverbal nouns, any vowel can appear in the final position of underived nouns. For example *i* and *o* can appear even when there is no agentive or result semantics, (9a), (9b). The remaining five vowels are also possible, (9c)-(9h).

- | | | | | | | |
|-----|----|-----------|----|------------|----|-------|
| (9) | a. | kî-ongo | d. | nkoonde | g. | kurû |
| | | 7-head | | 9.skin | | 9.dog |
| | b. | nyoni | e. | metha | | |
| | | 9.bird | | 9.table | | |
| | c. | mbaakî | f. | nkuru | | |
| | | 9.tobacco | | 9.tortoise | | |

Deverbal nouns, like deverbal adjectives do not therefore have a final vowel.

In the rest of this chapter we will concentrate on the distribution of final vowels in contexts that are neither derived adjectives nor nominalized verbs - the verb contexts.

4.1.2 FVs in verbs

Final vowels in verbs have the following distribution: the default final vowel is *a*, except (i) when there is the PERFECT OR PERFECTIVE, (ii) when there is a prefix which is not consonantal and not an expletive in imperatives, (iii) in the subjunctive. In these cases the final vowel must be *e*. We demonstrate these contexts in turn below.

(There are two irregular verbs that are an apparent counter-example to the above pattern. We will discuss them after we have gone through the three contexts.)

Perfect and perfective

In all declarative sentences without the PERFECT and PERFECTIVE, the final vowel must be *a*. This is irrespective of whether the sentences are in the affirmative, or the negative, (10) and (11).

- (10) Maria n-a-kû-thom- **a**
₁.Maria F-SA₁-T-read- FV
 ‘Maria is reading.’
- (11) Maria a- ti- kû-thom- **a**
₁.Maria SA₁- NEG- T-read- FV
 ‘Maria is not reading.’

The final vowel is also *a* in the declarative sentences with the other aspectual marker, the HABITUAL.

- (12) Maria n-a- thom- **ag- a**
₁.Maria F-SA₁- read- HAB- FV
 ‘Maria reads.’

With the PERFECT, and the PERFECTIVE however, the final vowel must be *e*.

- (13) a. Rû-jî i-rû-camûk- **îit- e**
₁₁-water F-SA₁₁-boil- PFC- FV
 ‘The water has boiled.’ (perfect)
- b. Rû-jî i-rû-camûk- **ir- e**
₁₁-water F-SA₁₁-boil- PFV- FV
 ‘The water boiled.’ (perfective)

It is usual in Bantu, to take the PERFECT and the PERFECTIVE suffixes to be complex - *îite* and *ire* respectively (see e.g. Thwala (1996:pg. 142), Odden (1996:pg.139), Downing (2005:pg. 125). The final vowel *e* is therefore taken to be part of these morphemes. We find it hard to maintain that *e* is part of the PERFECT and PERFECTIVE in Kîtharaka because two suffixes the INNER

CAUSATIVE and the PASSIVE can intervene between the two bits, (14).

- (14) a. Mw-îtha n-û-camûk- **îr**- **j**- **w**- e
 3-milk F-SA₃-boil- PFV- IC- PAS- FV
 ‘The milk was boiled.’
- b. Mw-îtha n-û-camûk- **ît**- **j**- **w**- e
 3-milk F-SA₃-boil- PFC- IC- PAS- FV
 ‘The milk was boiled.’

Because of this intervention, we will continue to treat the two bits as independent morphemes (see also Hyman et al. (to appear:footnote 2) for a similar conclusion).

The word order facts show that PERFECT and PERFECTIVE occupy the same position in the linear sequence of suffixes: both are sandwiched between the APPLICATIVE and INNER CAUSATIVE. We show this sandwiching for the PERFECTIVE in (15a), and for the PERFECT in (15b).

- (15) a. Maria n-a-camûk- **îr**- **i**- e mw-ana mw-îtha
 1.Maria F-SA₁-boil- APL- PFV- IC- FV 1-child 3-milk
 ‘Maria boiled milk for the child.’
- b. Maria n-a-camûk- **ît**- **i**- e mw-ana mw-îtha
 1.Maria F-SA₁-boil- APL- PFC- IC- FV 1-child 3-milk
 ‘Maria has boiled milk for the child.’

In addition, the PERFECT and PERFECTIVE are in complementary distribution, suggesting that they compete for the same position. Since PERFECT and PERFECTIVE occupy the same position, we can generalize that whenever this position is overtly filled, the final vowel must be *e*.

Imperatives

In imperatives without a prefix, the final vowel must be *a*, (16).

- (16) ring- {a | *e}
 hit- FV
 ‘hit!’

Suffixes, or post-verbal DPs do not trigger any change in the final vowel. Thus in (17) where there is the COERCE and the INNER CAUSATIVE suffixes, and two post-verbal DPs, the FINAL VOWEL still must be *a*.

- (17) ring- ith-i- {a | *e} John rû-thingo
 hit- CRC-IC- FV 1.John 11-wall
 ‘coerce John to hit the wall!’

The final vowel must also be *a* in imperatives with only a consonantal object prefix. There is only one consonantal prefix in Kîitharaka, the first person singular OBJECT MARKER. With this prefix, the FINAL VOWEL must be *a*, (18).

- (18) n- tem- {a | *e}
 OM_{1st.ps.sg}- cut- FV
 ‘cut me!’

Verbs such as *tema* in (18), form un-prefixed imperatives with the final vowel *a*, *tema!*. Since no change occurs when the consonantal prefix is added, it must be the case that this prefix does not have any property that would trigger change of the final vowel.

There is another prefix that has no effects on the form of final vowel determined by an un-prefixed imperative. This is the prefix *î*, which is homophonous with the REFLEXIVE. This morpheme can be prefixed to any imperative without another object prefix, and triggers no change in the final vowel determined by the root, as can be seen in (19).

- (19) î- tem- {a | *e}
 î- cut- FV
 ‘cut!’

Because of lack of a term for this morpheme, we will gloss it simply as *î*. Since this morpheme appears to be semantically vacuous, we will refer to it as expletive *î*. Since expletive *î* does not change the final vowel that occurs in un-prefixed imperatives (the final vowel *a*), it must be that it also lacks any property that can induce change, just like the consonantal first person object prefix.

We demonstrate in (20) that expletive *î* cannot be added when there is an object prefix.

- (20) *î- n- tem- {a | *e}
 î- OM_{1st.ps.sg}- cut- FV

Let us turn to contexts with other object prefixes. In contexts where the OBJECT MARKER is not a consonant, and the OBJECT MARKER is non-expletive, the FINAL VOWEL must be *e*. (21a) and (21b) demonstrate the final vowel *e* in the context of the REFLEXIVE, and SUBJECT AGREEMENT which are vowels.

- (21) a. î-ring- {*a | e}
 REFL-hit- FV
 ‘hit yourself!’
- b. a-rug- {*a | e}
 SA₁- cook- FV
 ‘She must cook!’

(22a) and (22b) illustrate that the FINAL VOWEL must be *e* in the context of future tense marker, and the class 9 prefix, which are made up of a consonant and a vowel.

- (22) a. ka-maam- {*a | e}
 FT-sleep- FV
 ‘go and sleep!’
- b. mî- ring- {*a | e}
 OM₉- hit- FV
 ‘hit it!’

(It is not very clear here whether *ka* is the future or some other morpheme—it has a rough meaning of ‘go and do something’.)

When we have a prefix that is a vowel, and that is not an expletive, and when we have a prefix made up of a consonant plus a vowel, the final vowel in imperatives with a single verb must be *e*. In contrast, when the prefix is an expletive vowel, or a consonant, the final vowel remains *a* in imperatives in single verbs.

The distribution of the final vowels in the imperatives above raises an obvious question of what is responsible for the contrast between the prefixes which trigger the change of the final vowel to *e*, and the expletive *î* and the consonantal first person prefix which do not change the form determined by an un-prefixed root. There are various solutions one could think of, most of which can be shown not to work. One solution that has been entertained is that the relevant property that triggers change of the final vowel to *e* is syllabicity (Buell (2005) attributes this solution to a paper by Juvenal Ndayiragije’s which I haven’t seen). Put precisely, the change to *e*, occurs when the object prefix is syllabic. Since the first person singular is a nasal consonant that assimilates to the initial consonant of the following root, perhaps forming a complex onset, then it will not trigger change to *e* - it doesn’t introduce an extra syllable. This solution, however appealing will not carry over to Kîtharaka

- the \hat{i} of the reflexive which triggers the change to e , is as good a syllable as the expletive \hat{i} which does not trigger any change.

One might also think that the property that triggers change to e is being singular- singular prefixes will trigger the change to e while plural prefixes will not. This will also not work because the first person singular object prefix does not trigger change to e , (23a) but the third person singular object prefix (which has the same form as the singular object prefix for class 1 nouns) does, (23b).

- (23) a. **n-** **tem-** {a | *e}
 OM_{1st.ps.sg}- cut- FV
 ‘cut me!’
- b. **mû-** **tem-** {*a | e}
 OM₁- cut FV
 ‘cut him!’

The relevant property triggering change cannot be first person either, such that first person would trigger the change while other persons would not. The first person singular OBJECT MARKER does not trigger the change of the final vowel to e , (24a), while the first person plural OBJECT MARKER does, (24c).

- (24) a. **n-** **tem-** {a | *e}
 OM_{1st.ps.sg}- cut- FV
 ‘cut me!’
- b. **tû-** **tem-** {*a | e}
 OM₁- cut FV
 ‘cut us!’

The trigger also cannot be being a consonant vs being a vowel plus an optional consonant such that consonants will not trigger the change to e , while a prefix made up of a vowel or a vowel+consonant will trigger the change to e . Expletive \hat{i} does not trigger the change to e even though it is a vowel.

There is another approach one might want to pursue however - that the first person singular and expletive \hat{i} are in a different syntactic position from the other object markers and the REFLEXIVE, and that at this syntactic height, the change to e cannot be triggered. Unlikely as this approach might look, there is actually evidence that the first person singular object prefix is in a position different from the other object prefixes and the REFLEXIVE. Recall from chapter

3 that object prefixes merge further from the root than the REFLEXIVE. We repeat the relevant example from chapter 3 in (25): the REFLEXIVE *i* is closer to the root than the object marker *ba*.

- (25) a. A-kû- **ba-** **î-** kum- îr- i-a
 SA₁-T- OM₂- REFL- proud- APL- IC-FV
 ‘S/he has been proud to the detriment of them.’

Quite surprisingly, when the REFLEXIVE and the first person object marker co-occur, they occur in the reverse order: the first person singular object pronoun *n* is closer to the root than the REFLEXIVE *i*, (26).

- (26) a. A-gû- **î-** **n-** kum- îr- i-a
 SA₁-T- REFL- OM_{1st.ps.sg}- proud- APL- IC-FV
 ‘S/he has been proud to the detriment of me.’
- b. **A-gû- **n-** **î-** kum- îr- i-a
 SA₁-T- OM_{1st.ps.sg}- REFL- proud- APL- IC-FV
 ‘S/he has been proud to the detriment of me.’

This data provides straightforward support for the analysis taking the factors determining the change of the final vowel to *e* to be structural - the change is only triggered by prefixes from the REFLEXIVE and above.¹

We should note that we cannot test where the expletive *î* merges with respect to the REFLEXIVE since (i) this suffix only occurs in imperatives and (ii) *î* cannot be added to another prefix in imperatives. From the similarity in behavior with the first person object pronoun however, we can assume that *î* merges lower than the bulk of the other prefixes, and REFLEXIVE - either immediately above the first person object pronoun, in the same position as the first person object pronoun, or below the first person object pronoun. Which

¹The structural analysis above creates a tension with our earlier conclusion that the OBJECT MARKER and the REFLEXIVE start low in the clause, and then move high. If this is true, then these two low prefixes do not form a structural continuum with the high prefixes, (TENSE, SUBJECT AGREEMENT) which do trigger the change too. What one would have to say here perhaps is that what counts for triggering the change of the final vowel to *e* is the final landing site of the low prefixes. When the OBJECT MARKER (non-expletive, non-consonantal) and REFLEXIVE have moved above the HABITUAL, they trigger the change, together with the other prefixes, since they form a structural continuum which can be defined by height. If this is the right way to view things, we would expect that when the OBJECT MARKER and REFLEXIVE remain low on the verb in the auxiliary construction, the FV does not change to *e*. This is the case.

of these positions is the right one is difficult to tell.

To summarize the result so far, the distribution of final vowels on single verbs, conforms to the pattern that *a* is the default with *e* being inserted in some specific environments (i) when there is PERFECT and the PERFECTIVE, and (ii) when there are prefixes higher than (and including) reflexive in the clausal hierarchy in imperatives.

Subjunctives

In subjunctive contexts, the FINAL VOWEL must be *e*. I illustrate with two subjunctive contexts below, one induced by the verb ‘want’, (27), and the other by ‘must’, (28).

- (27) I-n-kû-end-a atî John a-thom- { *a | e } bwega
 F-1st_{ps.sg}-T-want-FV that ₁.John SA₁-read- FV well
 ‘I would want that John studies well.’

- (28) John noa mwanka a-thom- { *a | e }
₁.John noa must SA₁-read- FV
 ‘John must read.’

This brings us to the end of the contexts that do not take the default final vowel *a*. Let us turn to the irregular verbs.

Irregular verbs

Let us begin by summarizing the result from the preceding section: *a* is the default vowel and occurs everywhere except in (i) sentences with the PERFECT and PERFECTIVE (ii) imperatives with prefixes merging from REFLEXIVE and above (iii) subjunctives. In this section, we discuss the problems presented by two irregular verbs, *thi*, ‘go’, and *ijî*, ‘know’ in light of these generalizations.

Let us start with the verb ‘go’. This verb behaves strangely in that in some contexts where other verbs need a final vowel, ‘go’ appears in its bare form - *thi*. We show this strange behaviour of *thi* by contrasting it with another verb, ‘return’.

In (29), a declarative sentence, ‘go’ appears without the final vowel *a*, while ‘return’ must have *a*, (29).

- (29) a. Maria n-a-kû- thi
₁.Maria F-SA₁-T- go
 ‘Maria is going.’

- b. Maria n-a-gû- cook- *(a)
₁.Maria F-SA₁-T- return- FV
 ‘Maria is returning.’

In the negative declarative sentence in (30), ‘go’ occurs without *a*. In contrast, ‘return’ must have *a*, (30b).

- (30) a. Maria a- ti- kû- thi
₁.Maria SA₁- NEG- T- go
 ‘Maria is not going.’
- b. Maria a- ti- gû- cook- *(a)
₁.Maria SA₁- NEG- T- return
 ‘Maria is not returning.’

Furthermore, in an imperative without a prefix, ‘go’ appears in its bare form, *thi!* without any final vowel. The verb ‘return’ must have *a* - *cook*-*(*a*)!

Note that the above cases cannot be accounted for by assuming that the final vowel *a* has undergone deletion due to some phonological restrictions, e.g. hiatus: *i-a* sequences are totally fine in Kîtharaka, as seen in the imperative *ki-a* ‘grind!’.

Observe also that in subjunctives without any other suffix, ‘go’ appears without any final vowel, (31a). The other verb ‘return’ must have *e*, (31b).

- (31) a. John noa mwanka a-thi
₁.John noa must sa₁-go
 ‘John must go.’
- b. John noa mwanka a-cook- *(e)
₁.John noa must sa₁-return- FV
 ‘John must return.’

Again note that the absence of *e* cannot be motivated on phonological grounds: *i-e* sequence are allowed in Kîtharaka, as in the subjunctive context in (32).

- (32) John noa mwanka a-ki- *(e)
₁.John noa must sa₁-grind- FV
 ‘John must grind.’

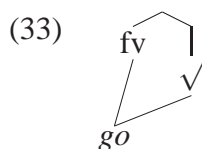
The verb ‘go’ cancels both of the generalizations we have spent some time defending - that *a* is the default, and *e* the form for specific environments, e.g. the subjunctive. How is one to confront this exception?

There are two ways we could account for the pattern with this verb. We could say that the last vowel *i* is the final vowel for these verbs, and lose our generalization that the *a* is the elsewhere case, and *e* the specific form. We could also say that *i*, is not the final vowel, then face the daunting task of explaining why *a* and *e* cannot occur. Let us examine both accounts, and see which one wins, and whether the winning candidate forces us to throw our generalizations through the window.

We can easily show that the first account cannot work. There is no other suffix that can intervene between the final *i* of ‘go’ and the preceding material. Thus when other suffixes are added on ‘go’, they are added after *i* vowel. (We provide these kinds of examples below.) This is evidence that *i* is part of the root, it is not the final vowel. *i* is a root internal vowel.

We are now left with the second alternative - that *i* is not the final vowel, and some mechanism of grammar is responsible for this absence. What is the nature of this mechanism?

First, it seems desirable to maintain the generalization that all verbal contexts have a final vowel. An attractive way to maintain this generalization is to assume that ‘go’ above actually appears in a syntactic configuration with a final vowel projection, but this projection, instead of getting spelled out by the FINAL VOWEL is spelled out by the root itself. In effect, therefore, we are saying that ‘go’ can spell out what the root spells out, plus an additional thing, the FV projection. We schematize this structure in (33), where \surd refers to the root, a notation emanating from Pesetsky (1995).



We don’t see the FINAL VOWEL in contexts with the verb ‘go’ therefore because the verb itself spells out this projection. If it is true that ‘go’ spells out the FV projection, then the root ‘go’ and the FV projection should be idiomatic. If root and FV projection are idiomatic, then they are a constituent. Nodes can be spelled out by the same morpheme if they are a constituent (Starke class lectures).

The success of the hypothesis above, that ‘go’ spells out the root as well as the FV projection depends on a number of assumptions. (We will give more details about these assumptions in chapter 5.) The first is that a single item

can spell out more than one terminal node - in other words, the spell out of terminals, as well as phrases by a single morpheme is allowed (see (McCawley (1968), Weerman and Evers-Vermeul (2002), Neeleman and Szendrői (2007), Abels and Muriungi (2008))). A single lexical item can therefore span several nodes in the syntax (under some conditions, which we come to in chapter 5).

The second assumption we need is late lexical insertion - that the replacement of syntactic features with phonology happens late (Halle and Marantz (1993). Thus syntax takes features for example root, final vowel features, and combines them, by the usual operations of merge, and move. It is only after the syntactic operations that replacement of syntactic nodes with actual lexical items happens. We need this assumption because of the following. We know that the FV projection can be spelled out by final vowels themselves. But we also know that the FV projection can be spelled out by roots e.g. ‘go’. There must therefore be a competition based system, where in some contexts, the final vowels are spelled out by the final vowels themselves, and in other contexts, the final vowels are spelled out by the root. One way to capture this competition is to say that once the syntax is finished with its job, lexical items are inserted into the syntactic nodes by the usual elsewhere condition that a more specific form wins over a less specific form (cf. Kiparsky (1973)). In our context, we would have to say, that the idiomatic form ‘go’, an aggregate of root and FV, wins over insertion of root, and a separate FV if the root and the FV are a constituent in the lexicon. I argue for such a spell out principle in chapter 5. This competition is difficult to capture in a system where syntax immediately manipulates items with phonological content.²

Suppose the above is true, that insertion of phonological content into the syntactic nodes happens late and that spell out by the same morpheme is only possible for constituents (under some competition principle). Then we have an expectation regarding the contexts with the verb ‘go’ above: if suffixes can be inserted between the root and the final vowel projection, we should see the FINAL VOWEL show up. This is because the root and the FV projection in the syntax are no longer a constituent, and therefore cannot be spelled out by a single item from the lexicon (e.g. ‘go’ in (33)).

There is actually evidence that this expectation is met. When suffixes such as the HABITUAL appear on ‘go’, we get the *a* final vowel in a declarative

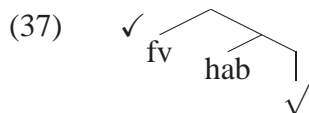
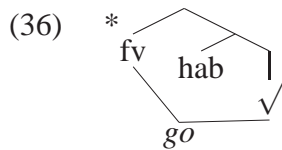
²Late insertion is also motivated in Distributed morphology from the fact that lexical items inserted into terminal nodes can be under-specified (contain less features) than the node where they are inserted. This mismatch between the features in the lexical item, and the syntactic node is nicely captured from first doing syntax, and then inserting lexical items afterwards using the best available candidate for the features in the syntax, even though that candidate might not have all the features in the syntax (see Halle and Marantz (1993) and subsequent work in distributed morphology for more discussion.

sentence, (34), and *e* in a subjunctive context, (35).

- (34) Maria n-a- thij- **ag-** a
 1.Maria SA₁- go- HAB- FV
 ‘Maria goes somewhere.’

- (35) Maria noa mwanka a-thij- **ag-** { *a | e } cukuru
 1.Maria noa must SA₁-go- HAB- FV 9.school
 ‘Maria must go to school habitually.’

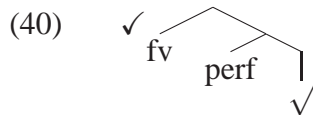
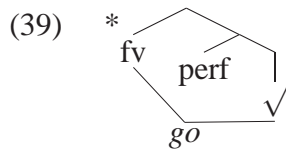
The magical appearance of the two final vowels in (34) and (35) is due to the fact that the HABITUAL is inserted between the root and the projection of the final vowel, breaking the idiom. The final vowel therefore has to show up in order to spell out its projection, since the root cannot reach that projection ACROSS HABITUAL - spell out of two parts by the same element is only possible for constituents (Starke class lectures). We demonstrate the spell out patterns below. (36) is ungrammatical because root and FV are spelled out by the same morpheme ACROSS HABITUAL. In (37), where the three projections are spelled out by different elements, the sentence is grammatical.



Note also that when the PERFECT and the PERFECTIVE appear on ‘go’, we get the normal syntax- the final vowel *e* must show up, (38):

- (38) a. Maria n-a- thi- **îit-** e
 1.Maria SA₁- go- PFC- FV
 ‘Maria is going somewhere.’
- b. Maria n-a- thi- **ir-** e
 1.Maria SA₁- go- PFV- FV
 ‘Maria went somewhere.’

The reason why the final vowel suddenly pops up is as before. PERFECT and PERFECTIVE are inserted below the FV projection, the root cannot spell out the FV projection because constituency is broken, and the regular syntax has to apply - leading to the insertion of the final vowels. We demonstrate the illicit structure in (39), where the root also spells out FV across PERFECT, and the licit structure in (40), where the three projections are spelled out by different elements.



Let us consider briefly the other irregular verbs *îjî*, ‘know’. In contexts where we find the default *a*, for example a declarative sentence without the PERFECT and PERFECTIVE, the FINAL VOWEL *a* does not show up, (41).

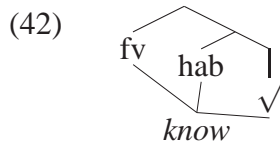
- (41) N-a-kû- ijî
 F-SA₁-T- know
 ‘S/he knows you.’

‘know’ like ‘go’ is therefore an irregular verb.

This verb behaves much more radically than ‘go’ - it does not accept any suffix (except the PLURAL ADDRESSEE and only marginally).

To capture the radical absence of suffixes other than the PLURAL ADDRESSEE on ‘know’, we have to say that ‘know’ is idiomatic with most of the projections associated with the suffixes. Thus it can spell out all these projections. That is the phonology of these projections in the context of ‘know’ is just ‘know’.

To illustrate this reasoning, consider the HABITUAL. To know a person (with the verb *ijî* in Kîtharaka), is to know that person all the time. ‘know’ is therefore habitual in some sense. It is very plausible therefore ‘know’ spells out the three projections root, HABITUAL and FINAL VOWEL as shown in (42).



It appears therefore like we can maintain our generalization that all verbal contexts have final vowels. The difference that we need to note is that the FV projection is sometimes lexicalized by the final vowels themselves, or by the root.

Having shown that we can maintain our generalization in the face of the irregular verbs, let us turn to the syntactic distribution of the final vowels.

4.1.3 The syntactic distribution of the FVs

Let us start with the distribution of final vowels on a single verb. In a single verb, all the final vowels immediately follow the passive. (43) shows the final vowel after the PASSIVE in an imperative.

- (43) I-ba-tûm- w- e
 F-SA₂-cook- PAS- FV
 ‘Let them be sent!’

The final vowel also follows the PASSIVE in a sentence with the PERFECTIVE, (44a), and the PERFECT, (44b).

- (44) a. Rû-jî i-rû-camûk- iir- j- w- e
₁₁-water F-SA₁₁-boil- PFV- IC- PAS- FV
 ‘The water was boiled.’
- b. Rû-jî i-rû-camûk- iit- j- w- e
₁₁-water F-SA₁₁-boil- PFV- IC- PAS- FV
 ‘The water was boiled.’

Subjunctive sensitive *e* also occurs after the PASSIVE, (45).

- (45) I-ba-kû-end-a atî ma-buku ma-thom- w- e bwega
 F-sa₂-T-want-FV that ₆-book SA₆-read- PAS- FV well
 ‘They would want that the books be read well.’

Let us turn to the distribution of final vowels in restructuring contexts - contexts that can have several verbs in a row. In restructuring contexts with many

verbs, there are as many final vowels as there are verbs. Thus in (46) with three verbs, there are three final vowels.

- (46) Ma-buku i-ma-amb-î-îr-i- e kû-thir- a kû-thom-w- a
₆-book F-SA₆-begin-APL-PFV-IC- FV ₁₅-finish- FV ₁₅-readPAS- FV
 ‘Someone began to finish to read books.’

If we have four verbs, we would have four final vowels, and if we have five verbs, we would have five final vowels.

We have shown in the appendix to chapter 2 that restructuring contexts are a single fseq. For example, certain affixes that occur only once on a single verb e.g. ERRATIC also occur once in a restructuring context. Given that restructuring contexts are a single fseq, we have to conclude from (46), that there can be several final vowel projections in an fseq.

We have seen that final vowels are sensitive to three properties: imperative force, subjunctive and PERFECTIVE/ PERFECT aspects. We investigate below where these properties are expressed in a restructuring context.

Let us start with the imperative. Imperative force is encoded on the first verb. Thus in (47), the final vowel *e* which is sensitive to prefixes higher than and including the reflexive occurs on the highest verb, not on any of the two embedded verbs.³

- (47) Ma-buku i-ma-amb-îr-i- { *a | e } kû-thir- { a | *e } kû-thom-w-
₆-book F-SA₆-begin-APL-IC- FV ₁₅-finish- FV ₁₅-readPAS-
 { a | *e }
 FV
 ‘Let the books begin to be read to completion!’

Sensitivity to the subjunctive is also encoded on the highest verb, as shown in the clause below embedded under ‘must’. Only the highest verb can contain *e*, (48).

- (48) Ma-buku noa mwanka ma-amb-îr-i- { *a | e } kû-thir- { a | *e }
₆-book noa must SA₆-begin-APL-IC- FV ₁₅-finish- FV
 } kû-thom-w- { a | *e }
₁₅-readPAS- FV
 ‘The books must begin to be finished to be read.’

³If we had an active sentence, and a prefix that usually triggers change of the final vowel to *e* on the lower verb, the final vowel couldn’t change to *e* - this is direct confirmation that imperative sensitivity is not encoded on the lower verb - we need a non-passive sentence because passive and object marking do not co-occur in Kûtharaka.

The final vowel sensitive to PERFECT is realized on whatever verb that has the PERFECT. If there is PERFECT alone, this is the first verb other than BE. When the PERFECT co-occurs with the HABITUAL, PERFECT occurs on the second verb except BE. (see the appendix to chapter 2 for details on where PERFECT occurs.)

When the PERFECT and the imperative co-occur, the imperative is encoded on the first verb, and the PERFECT on the second verb other than BE. Consider (49). The highest verb must have *e*, since we have an imperative, and the matrix verb contains a prefix. The PERFECT occurs on the second verb and this verb must have *e*.

- (49) Ma-buku i- ma-îg-ag-u- { *a | e } ma-amb-î- îr- i- { *a |
 6-book F- SA₆-be-HAB-rootii- FV SA₆-begin-APL- PFC- IC- FV
 e } kû-thir- { a | *e } kû-thom-w- { a | *e }
 15-finish- FV 15-readPAS- FV
 ‘Usually let (you guys) begin to finish to read the books.’

We get the same pattern with subjunctive contexts with ‘must’. The first verb must have *e*, to show that we have a subjunctive context, and the verb with PERFECT ‘begin’ must have *e*.

- (50) Ma-buku noa mwanka ma-amb-îr-i- { *a | e } kû-îg-u-a ma-thir-
 6-book noa must SA₆-begin-APL-IC- FV 15-be-VR-FV SA₆-finish-
 ir- { *a | e } kû-thom-w- { a | *e }
 PFC- FV 15-readPAS- FV
 ‘The books must be began to be finished to be read.’

We cannot test where the three properties are encoded on one construction since imperative and subjunctive cannot co-occur, perhaps because both are [-realis]. It tempting however to think that because imperative and subjunctive are [-realis], they share a syntactic position.

To summarize, on a single verb, the final vowels occurs consistently after the passive morpheme. In multi-verb constructions, there are as many final vowels as there are verbs. Imperative and subjunctive sensitivity is encoded on the first verb, and sensitivity to PERFECT and PERFECTIVE on a second verb that is not BE. There are several projections for final vowels in a single functional sequence. We take up the issue of how these many final vowels are licensed in a single fseq in Appendix A.

With the description of the final vowels in place, let us turn to the plural addressee.

4.2 Distribution of the plural addressee

In this section we turn to the distribution of the plural. We start with the contexts where the plural addressee is used, then move on to its syntactic distribution.

4.2.1 Contexts for plural addressee

The plural addressee is used in two contexts. First, the plural addressee is used to denote an addressee with a plurality of individuals.

We can confirm that the PLURAL ADDRESSEE denotes a plural addressee by the sentence in (51) with a second person singular object pronoun. This sentence is ungrammatical because the PLURAL ADDRESSEE appears in a construction with a singular addressee.

- (51) *I-ba- **kû-** thok-ir-i-e- **ni**
 F-SA₁- OM_{2nd.ps.sg}- invite-PFV-IC-FV- PA

A sentence with a second person plural object pronoun is however grammatical when there is the PLURAL ADDRESSEE, because we have an addressee that is plural, as a result of the feature content of the pronoun, (52).

- (52) I-ba- **bû-** thok-ir-i-e- **ni**
 F-SA₂- OM_{2nd.ps.pl}- invite-PFV-IC-FV- PA
 ‘They invited you guys.’

Note that the PLURAL ADDRESSEE doesn’t need to be grammatically encoded in the sentence, as shown in the context in (53), where there is no pronominal in the sentence signaling the addressee. What is crucial is that the addressee be plural whether overtly expressed or not hence the contrast in (53a) and (53b).

- (53) I-rio i-bi-bî-îr-e- **ni**
 8-food F-cook-PFV- PA
- ✓ Food is cooked - a mother addressing her three children.
 - *Food is cooked - a mother addressing her only son.

There is a second context where the plural addressee can be used. It can

be used to denote an addressee respected by the speaker, regardless of the plurality. The sentence in (54) is ungrammatical given the context in (54a) because the respected person is not an addressee. When the respected person is also the addressee, then the sentence is fine, (54b).

- (54) N-a-kar-ir-e- **ni** aga
 F-SA₁-PFV-FV- PA here
- a. * She sat here: a husband telling his wife that his mother-in-law (whom he respects) sat there.
- b. ✓ She sat here: father telling his mother-in-law where his daughter sat.

The plural addressee therefore denotes two things - an addressee that is plural, or an addressee that is respected by the speaker. Both uses of the PLURAL ADDRESSEE share the addressee component of meaning.

4.2.2 The syntactic distribution of the plural addressee

The syntactic distribution of the PLURAL ADDRESSEE seems to be complex. What follows is a first approximation of its distribution. The PLURAL ADDRESSEE occurs on the topmost verb or on the last verb of the main projection line. The PLURAL ADDRESSEE always follows the FINAL VOWEL.

To illustrate this, consider the sentence in (55), with the factive verb ‘regret’, and where this verb embeds two clauses with the verbs ‘announce’ and ‘arrest’. In this sentence, the addressee, who is the second person plural object pronoun (*bû*) occurs on the most embedded verb ‘arrest’. The PLURAL ADDRESSEE can occur on the topmost verb ‘regret’, even though this is not the verb with the addressee object pronoun, (55).

- (55) N-a-kû-irir-a- **ni** atî mû-nene n-a-tangac-ir-e atî ba-ka-
 F-SA₁-T-regret-FV- PA that ₁-BOSS F-SA₁-announce-PFV-FV that SA₂-FT-
bû- gwat-a
 OM_{2nd}.ps.pl- arrest-FV
 ‘He regrets the boss announced that they will arrest you.’

The PLURAL ADDRESSEE can also occur on the last verb, (56).

- (56) N-a-kû-irir-a atî mû-nene n-a-tangac-ir-e atî ba-ka- **bû-**
 F-SA₁-T-regret-FV that ₁-BOSS F-SA₁-annouce-PFV-FV that SA₂-FT-OM_{2nd.ps.pl}-
 gwat-a- **ni**
 arrest-FV- PA
 ‘He regrets the boss announced that they will arrest you.’

In addition, the PLURAL ADDRESSEE can double on the topmost or the last verb.

- (57) N-a-kû-irir-a- **ni** atî mû-nene n-a-tangac-ir-e atî ba-ka-
 F-SA₁-T-regret-FV- PA that ₁-BOSS F-SA₁-annouce-PFV-FV that SA₂-FT-
bû- gwat-a- **ni**
 OM_{2nd.ps.pl}- arrest-FV- PA
 ‘He regrets the boss announced that they will arrest you.’

The PLURAL ADDRESSEE however cannot occur on the medial verb ‘announce’, (58).

- (58) *N-a-kû-irir-a atî mû-nene n-a-tangac-ir-e- **ni** atî ba-ka-
 F-SA₁-T-regret-FV that ₁-BOSS F-SA₁-annouce-PFV-FV- PA that SA₂-FT-
bû- gwat-a
 OM_{2nd.ps.pl}- arrest-FV

The PLURAL ADDRESSEE therefore occurs on the topmost or the last verb in the main projection line.

We can demonstrate the same pattern with relative clause contexts below. In this context, the addressee, a second person plural subject pronoun (*bû*) is embedded deep in the subject, in an adjunct clause on the verb ‘go’. Notwithstanding, the PLURAL ADDRESSEE can occur on the topmost verb ‘decide’, (59).

- (59) Mu-ntû û-ra a-mam-ir-e nyumaya **bû-kuthi** n-a-baang-ir-e
₁-person ₁-that SA₁-sleep-PFV-FV after of SBJ_{2nd.ps.pl}-go F-SA₁-decide-PFV-FV-
ni kû-amb-îr-i-a gû-ceth-a
 PA ₁₅-begin-APL-IC-FV ₁-play-FV
 ‘The person who fell asleep before you guys left decided to begin to play.’

The PLURAL ADDRESSEE can also occur on the last verb ‘play’, (60).

- (60) Mu-ntû û-ra a-mam-ir-e nyuma ya **bû**-kuthi n-a-baang-ir-e
 1-person 1-that SA-1-sleep-PFV-FV after of SBJ._{2nd.ps.pl}-go F-SA₁-decide-PFV-FV
 kû-amb-îr-i-a gû-ceth-a- **ni**
 15-begin-APL-IC-FV 1-play-FV- PA
 ‘The person who fell asleep before you guys left decided to begin to play.’

The PLURAL ADDRESSEE can double on the topmost verb ‘decide’ and the last verb ‘play’, (61).

- (61) Mu-ntû û-ra a-mam-ir-e nyuma ya **bû**-kuthi n-a-baang-ir-e-
 1-person 1-that SA-1-sleep-PFV-FV after of SBJ._{2nd.ps.pl}-go F-SA₁-decide-PFV-FV-
ni kû-amb-îr-i-a gû-ceth-a- **ni**
 PA 15-begin-APL-IC-FV 1-play-FV- PA
 ‘The person who fell asleep before you guys left decided to begin to play.’

The PLURAL ADDRESSEE however cannot occur on the medial verb ‘begin’ even though it is on the main projection line, (62).

- (62) *Mu-ntû û-ra a-mam-ir-e nyuma ya **bû**-kuthi n-a-baang-ir-e
 1-person 1-that SA-1-sleep-PFV-FV after of SBJ._{2nd.ps.pl}-go F-SA₁decide-PFV-FV
 kû-amb-îr-i-a- **ni** gû-ceth-a
 15-begin-APL-IC-FV- PA 1-play-FV

The PLURAL ADDRESSEE therefore occurs on the topmost or the last verb in the main projection line.

The plural addressee is optional in the above cases, and in imperatives of the ‘let’ type. We provide one case of a ‘let imperative’ in (63).

- (63) Ma-buku i-ma-amb-îr-i-e- (**ni**) kû-thir-a kû-thom-w- a
 6-book F-SA₆-begin-APL-IC-FV- PA 15-finish- FV 15-read-PAS- FV
 ‘Let you guys begin to finish to read books.’

The plural addressee is however obligatory in imperatives where the addressee is plural, whether we have a single verb, (64), or a multi-verb construction, (65).

- (64) ring- *(**ni**) ‘hit’ - addressed to two or more people

- (65) Amb-îr-i-a- *(**ni**) kû-rig-an-îr-i-a kû-romb-a
 begin-APL-IC-FV- PA 15-forget-AN-APL-IC-FV 15-beg-FV
 ‘begin to forget to beg!’ - addressed to two or more people.

Furthermore in imperatives in multi-verb constructions, the PLURAL ADDRESSEE must occur on the topmost verb, (65). It cannot occur on the medial verb, (66).

- (66) *Amb-îr-i-a kû-rig-an-îr-i-a **ni** kû-romb-a
 begin-APL-IC-FV 15-forget-AN-APL-IC-FV- PA 15-beg-FV

The PLURAL ADDRESSEE cannot occur on the last verb, (67a), or double on the topmost and last verb, (67b).

- (67) a. *Amb-îr-i-a kû-rig-an-îr-i-a kû-romb-a **ni**
 begin-APL-IC-FV 15-forget-AN-APL-IC-FV 15-beg-FV- PA
 b. *Amb-îr-i-a- **ni** kû-rig-an-îr-i-a kû-romb-a- **ni**
 begin-APL-IC-FV- PA 15-forget-AN-APL-IC-FV 15-beg-FV- PA

Quasi imperatives of the let type resemble imperatives in this way. The PLURAL ADDRESSEE can only occur on the topmost verb, (68).

- (68) Ma-buku i-ma-amb-îr-i-e- **ni** kû-thir-a kû-thom-w-a
 6-book F-SA₆-begin-APL-IC-FV- PA 15-finish-FV 15-read-PAS-FV
 ‘Let the books begin to be finished to be read!’

The PLURAL ADDRESSEE cannot occur on the medial verb, (69a), or on the last verb, (69b). Doubling of the PLURAL ADDRESSEE on the first or last verb is also impossible, (68c).

- (69) a. *Ma-buku i-ma-amb-îr-i-e- kû-thir-a- **ni** kû-thom-w-a
 6-book F-SA₆-begin-APL-IC-FV 15-finish-FV- PA 15-read-PAS-FV
 b. *Ma-buku i-ma-amb-îr-i-e- kû-thir-a kû-thom-w-a-
 6-book F-SA₆-begin-APL-IC-FV 15-finish-FV 15-read-PAS-FV-PA
ni
 c. *Ma-buku i-ma-amb-îr-i-e- **ni** kû-thir-a kû-thom-w-a-
 6-book F-SA₆-begin-APL-IC-FV- PA 15-finish-FV- PA 15-read-PAS-FV-
ni
 PA

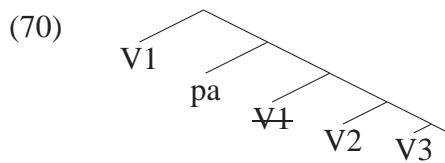
Let imperatives portray a dual behaviour. Like declaratives, the PLURAL

ADDRESSEE is optional. Like imperatives, the PLURAL ADDRESSEE must occur on the topmost verb. This dual behaviour might suggest that let imperatives are intermediate between a declarative and imperative.

Let us summarize the result. The plural addressee is the last suffix on a single verb. In multi-verbs that are not imperatives, the plural addressee can occur on the topmost or the last verb, or double on the topmost and last verb in the main projection line. In imperatives, the PLURAL ADDRESSEE can only occur on the topmost verb.

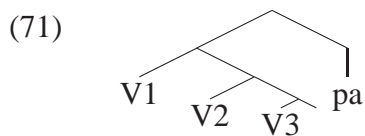
How could one account for these patterns? Here is a sketch. To capture the syntactic distribution of the PLURAL ADDRESSEE we would have to say that (i) The PLURAL ADDRESSEE occupies a high position in the hierarchy of the clause, (ii) that the PLURAL ADDRESSEE always merges in the root clause, (iii) The differences in the position of the PLURAL ADDRESSEE follow from differences in the movements triggered by PLURAL ADDRESSEE.

Let us see how this would capture the patterns. Consider the structure in (70) where the complement of the PLURAL ADDRESSEE has three verbs. When PLURAL ADDRESSEE attracts the topmost verb, we get the PLURAL ADDRESSEE as a suffix on this verb. This is illustrated in (70).



We would have to stipulate for now that this is the only derivation possible for imperatives. This derivation however is generally available for declaratives.

When PLURAL ADDRESSEE attracts its whole complement, we get the PLURAL ADDRESSEE on the last verb.



We have to stipulate that this derivation is unavailable for imperatives, but always available for declaratives.⁴

⁴We should acknowledge here some data that we currently do not know how an analysis for them would look like. The judgements are not very clear, but it appears like the PLURAL ADDRESSEE can occur on the last verb of a subject relative in object position, even when this subject relative clause has an object DP. This cannot be treated under this analysis since one would expect the PLURAL ADDRESSEE to show up on the object DP in the relative clause when the PLURAL ADDRESSEE attracts the whole complement given that Kîtharaka is an SVO language. The PLURAL ADDRESSEE however appears on the verb, not the object. To

Although easily statable, the two movements involving attracting the highest verb, or the whole complement require an intricate set of assumptions. We will therefore postpone discussion of suffixation of PLURAL ADDRESSEE (in fact also final vowels) in multi-verb constructions to Appendix A. In this appendix, we will speculate on how one could get the doubling of the PLURAL ADDRESSEE in declaratives. In the remainder of the chapter we concentrate on the derivation involving the FINAL VOWEL and PLURAL ADDRESSEE attaching to a single verb.

4.3 FV and PA on a single verb: the derivation

We have seen that on a single V, the FINAL VOWEL and the PLURAL ADDRESSEE follow the passive in the order PASSIVE-FINAL VOWEL-PLURAL ADDRESSEE, (72).

- (72) Tw-ana i-tû-ûk- iir-j- w- e- ni
 13-child F-SA₁₃-wake up- PFV-IC- PAS- FV- PA
 ‘The children were woken up you people.’

Recall from chapter 2, that passive is the lowest member of the habitual-perfect zone, a zone where the root moves cyclically. We repeat this derivation from chapter 2 in (73).

get the PLURAL ADDRESSEE to be on the verb, we would have to topicalize an object out of a relative clause, and this is impossible in Kîtharaka (see Abels and Muriungi (2008)). The second complication is seen in coordination structures where the PLURAL ADDRESSEE can occur only on the first conjunct. While we could analyze the presence of the PLURAL ADDRESSEE on the first conjunct by attraction of the highest verb (the first conjunct is higher than the second conjunct e.g. by binding facts), it is not clear why the whole complement couldn't be attracted leading to the PLURAL ADDRESSEE to be on the last verb in the second conjunct. We will leave these complications for future research.

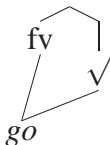
zone reduplicates without a problem, (75b).

(75) *rîani rîâni ‘pay quickly’

(76) rîwa rîwa ‘be payed quickly’

If the restriction on what can duplicate is structural, then the PLURAL ADDRESSEE, cannot merge below the PASSIVE, as the passive participates in reduplication without a problem, (78). The PLURAL ADDRESSEE therefore minimally must merge above the HABITUAL given that the HABITUAL also participates in reduplication albeit marginally.

We can also tell that the PLURAL ADDRESSEE is above the FINAL VOWEL by spell out patterns with the irregular verbs. We argued, when we looked at irregular verbs such as ‘go’, that the reason we don’t see the final vowel when we normally see it with other verbs is because the root spells out the syntax up to the final vowel, (77).

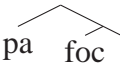
(77) 

In this very context where final vowels are impossible, prefixes and the PLURAL ADDRESSEE are possible, (78).

(78) N-a-thi- ni
F-SA₁-go- PA
‘let him go you guys.’

The very fact that the PLURAL ADDRESSEE and the prefixes can occur in (78), when there is no FV provides evidence that both the PLURAL ADDRESSEE and the prefixes are above the FINAL VOWEL in two ways. First since the sentence is grammatical, it must be that both the PLURAL ADDRESSEE and the prefixes are outside of the idiomatic constituent. Since the root is the lowest element in the clause structure, then the PLURAL ADDRESSEE and the prefixes must be higher than the FV - they cannot be lower than root. Second, since the sentences are grammatical without any FINAL VOWEL, it must be that the PLURAL ADDRESSEE and the prefixes do not merge between the root and the final vowel projection. If they did, we would expect the final to show up since the root cannot spell it out anymore - spell out is only possible for constituents. If this reasoning is right, then both the PA and the prefixes must merge above the FINAL VOWEL.

There is another crucial property we know about the PLURAL ADDRESSEE which can help us know where it is merged: the PLURAL ADDRESSEE is severed from the other affixes (from the FOCUS MARKER up to the FINAL VOWEL), by a small pause intonation. We will take this to be an indication that the PLURAL ADDRESSEE is merged outside the constituent containing focus and all the other affixes. The PLURAL ADDRESSEE therefore plausibly merges in the left periphery of the clause above the FOCUS MARKER as shown in (79).

(79) 

This now leaves us with the final vowels. Where are they merged? The spell out patterns with irregular verbs help us locate the position of the final vowels. Consider the spell out patterns with the irregular verb ‘go’. We have seen that root ‘go’ must occur without the FV, in the absence of suffixes e.g. HABITUAL, (80).

(80) Maria a-kû-thi
₁.Maria SA₁-T-go-FV
 ‘Maria has gone somewhere.’

When the HABITUAL is in the sentence however, the FINAL VOWEL has to show up. The final vowel in (81) is *a*.

(81) Maria n-a- thij- **ag-** a
₁.Maria SA₁- go- HAB- FV
 ‘Maria goes somewhere.’

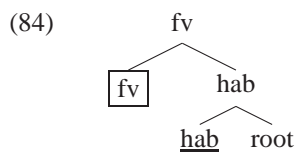
We can also show the same for the final vowel *e* in a subjunctive context. When there is NO HABITUAL, the final vowel cannot show up, (82).

(82) Maria noa mwanka a-thi cukuru
₁.Maria noa must SA₁-go g.school
 ‘Maria must go to school.’

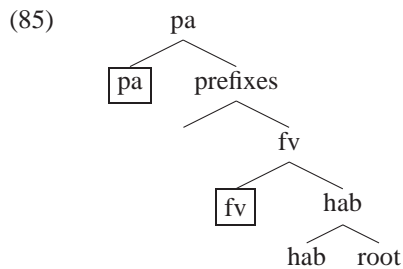
When however the HABITUAL is inserted, *e* must show up, (83).

(83) Maria noa mwanka a-thij- **ag-** { *a | e } cukuru
₁.Maria noa must SA₁-go- HAB- FV g.school
 ‘Maria must go to school habitually.’

We have claimed that the final vowel doesn't show up sometimes because the root can spell out the final vowel projection, when the root and the final vowel projection are a constituent. The final vowels however show up when this constituency is broken. Since the *HABITUAL* forces the appearance of *a* as well as *e*, as shown above, it must be that that *HABITUAL* merges between the root and the final vowels projection breaking the constituency of root+*FV*. Hence both the *a* and the *e* final vowels must merge above *HABITUAL*, as shown in (84)- otherwise the *HABITUAL* wouldn't break the constituency.



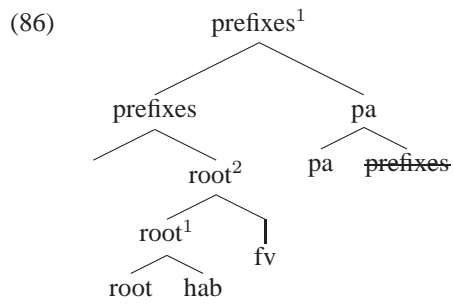
To sum up so far, we have shown that the *PLURAL ADDRESSEE* merges above the prefixes in the clausal hierarchy. We have also shown that the *FINAL VOWEL* merges immediately above the *HABITUAL*, but below the prefixes. This gives us the hierarchy of merge in (85).



The surface order would arise in the following steps:

- The root moves past hab
- root+hab moves past the *FINAL VOWEL*
- prefixes are merged
- The *PLURAL ADDRESSEE* is merged
- The constituent containing the prefixes is moved above the *PLURAL ADDRESSEE*

The derivation is illustrated in (86).



To summarize, we have shown in this chapter that the final vowels merge between HABITUAL and the prefixes, and the PLURAL ADDRESSEE above the FOCUS MARKER, the highest prefix. This derivation for incorporating the FINAL VOWEL and PLURAL ADDRESSEE still conforms to our dragging movement technology.

Chapter 5

The lowest suffixes

5.1 Why low

In this chapter, we look at suffixes that are quite low in the clausal structure. These suffixes are low because of one main reason: they are idiomatic with the root and therefore must be stored as a constituent with the root in the lexicon. We also get confirmation from scope facts that these morphemes are low in the clausal hierarchy - they scope below morphemes that are not very high in the clause, for example *COERCE*.

This chapter is organized as follows. First we establish the range and properties of the low suffixes. Then we account for the distributional properties of these suffixes. Third, we document that the low suffixes are indeed low in the clause - they take scope very low in the clause. Having looked at the lowest zone in the hierarchy of the clause, we end the chapter by reminding the reader how the whole derivation from prefixes to suffixes unfolds on a single verb in Kîtharaka.

5.2 The plugs

Plugs are suffixes that certain roots require before they can be used in any construction. Such roots therefore cannot exist without one of these plugs. The plug suffixes come in two main groups - the substitutable plugs, and the non-substitutable plugs.

Substitutable plugs can replace each other on the same root. To illustrate this, take an abstract root, *ton*, and three substitutable suffixes X, Y Z. This root can only exist if there is, X, Y, or Z, as shown in (1a)-(1c). It cannot exist when a member of the group is absent, (1d), (1e).

- (1) a. ton-X
 b. ton-Y
 c. ton-Z
 d. *ton
 e. *ton-W

The other plug suffixes, the non-substitutable plugs, are always required by certain root. To illustrate, take an abstract root *tan*, and a suffix P. *tan* will always require P.

We will first examine the properties of the substitutable plugs, and then move on to the non-substitutable plugs.

5.2.1 The substitutable plugs

The substitutable plugs, the suffixes that can replace each other on the same root, come in two classes. The first class has three members, while the second class has two members.

Let us start with the three member class. This class has three suffixes *ik*, *ur* and *uk*. *ik* marks transitivity, *ur* transitivity and reversiveness, *uk* just reversiveness. This distribution is illustrated in (2). (2a) has the morpheme *ik* which encodes transitivity, (2b) the morpheme *ur* which encodes transitivity and reversiveness, and (2b) the morpheme *uk* which conveys reversiveness.

- (2) a. kun-**ik**-a ‘X covers Y’
 b. kun-**ur**-a ‘X uncovers Y’
 c. kun-**uk**-a ‘Y gets uncovered’

Note that there is no base verb *kuna*, (3), from which we could say the three forms in (2) have been derived from.

- (3) *kûn-a

Note furthermore, that we cannot stack these morphemes. For example, we couldn’t combine *ik* and *uk* in whatever order (4a)-(4b) to get a meaning that was transitive and reversive (X uncovers Y).

- (4) a. *kun-**ik-uk**-a
 b. *kûn-**uk-ik**-a

We cannot also stack *ik* and *ur* in whatever order, (5a)-(5b), to get a meaning

that is both transitive and reversive (X uncovers Y).

- (5) a. *kun-**îk**-**ûr**-a
b. *kûn-**ûr**-**îk**-a

Finally *ûk* and *ûr* cannot also be stacked in whatever order, (6).

- (6) a. *kun-**ûr**-**ûk**-a
b. *kûn-**ûk**-**ûr**-a

The three suffixes therefore substitute each other.

The verb ‘cover’ is not the only one that shows this three way substitution pattern. We list the other verbs that show this alternation below. (This is an (almost) complete list of these verbs.)

- (7) a. kûnd-**îk**-a ‘X ties a knot’
b. kund-**ûr**-a ‘X unties knot’
c. kund-**ûk**-a ‘knot gets undone’
- (8) a. tand-**îk**-a ‘X spreads Y e.g. a bed-sheet’
b. tand-**ûr**-a ‘X takes Y from a spread state’
c. tand-**ûk**-a ‘Y gets un-spread’
- (9) a. an-**îk**-a ‘X spreads Y in the sun in order for Y to dry’
b. an-**ûr**-a ‘X takes away Y from a drying location’
c. an-**ûk**-a ‘Y gets from a drying location’
- (10) a. tha-**îk**-a ‘X ties Y, Y an animate thing’
b. thar-**ûr**-a ‘X unties Y, Y an animate thing’
c. thar-**ûk**-a ‘Y gets untied’¹
- (11) a. kaand-**îk**-a ‘X fastens Y’
b. kaand-**ûr**-a ‘X unfastens Y’
c. kaand-**ûk**-a ‘Y comes loose’

¹There is an -r insertion between the root and plug suffix in the [b] and [c] examples. This -r optionally can be left out.

- (12) a. umb-**îk**-a ‘X covers Y e.g. in soil/warm ash’
 b. umb-**ûr**-a ‘X uncovers Y’
 c. umb-**ûk**-a ‘Y gets uncovered’

Let us turn to the second class of substitutable plug suffixes. This class consists of verbs that are like the three member class above, except that the positive member (the one containing *îk*) is missing. We illustrate this class with the verb ‘open’ in (13). (13a) has the *ûr* suffix, and (13b) the *ûk* suffix.

- (13) a. rug-**ûr**-a ‘X opens Y’
 b. rug-**ûk**-a ‘Y opens’

It is not clear whether verbs in this class are reversible. Perhaps these verbs are reversible, but their reversiveness is made less prominent because in contrast to the verbs showing the three way alternation, these verbs lack the positive transitive member.

We should note that there is no base verb *ruga* from which the two forms in (13) could be said to be derived from, (14).

- (14) **ruga*

Furthermore no combination of *ûr* and *ûk* is licit on ‘open’. The forms are ungrammatical whether *ûr* precedes *ûk*, (15a), or *ûk* precedes *ûr*, (15b).

- (15) a. *rug-**ûr-ûk**-a
 b. *rug-**ûk-ûr**-a

The two suffixes therefore must substitute each other.

There are other verbs that behave like ‘open’ above in that (i) They show the two way substitution pattern, (ii) They have a less prominent reversible semantics, and (iii) They cannot be stacked. We list these verbs below, showing only the form with *ûr* and *ûk* without demonstrating the lack of stacking.²

- (16) a. at-**û**-ra ‘X splits Y’
 b. at-**ûk**-a ‘Y splits’

²The morphemes *ûr* and *ûk* have a phonological allomorph: they appear as *or* and *ok*, when the vowel that immediately precedes them is *o* or *e*.

- (17) a. bînd-**ûr**-a ‘X turns Y’
b. bînd-**ûk**-a ‘Y turns’
- (18) a. tûûm-**ûr**-a ‘X bursts Y’
b. tûûm-**ûk**-a ‘Y bursts’
- (19) a. kû-**ûr**-a ‘X uproots Y’
b. kû-**ûk**-a ‘Y gets uprooted’
- (20) a. ak-**ûr**-a ‘X gathers Y’
b. ak-**ûk**-a ‘Y (e.g cereals) gets gathered’
- (21) a. tû-**ûr**-a ‘X pours Y’
b. tû-**ûk**-a ‘Y pours’
- (22) a. om-**or**-a ‘X dismantles Y e.g a wall’
b. om-**ok**-a ‘Y crumbles down’
- (23) a. can-**ûr**-a ‘X combs Y’
b. can-**ûk**-a ‘Y gets combed’
- (24) a. cumb-**ûr**-a ‘X disturbs Y’
b. cumb-**ûk**-a ‘Y struggles’
- (25) a. en-**ûr**-a ‘X turns Y inside out/inside in (e.g. a pullover)’
b. en-**ûk**-a ‘Y turns inside out/inside in’ (e.g. a pullover)

The substitutable plugs raise at least two issues. First, why is a member of the class always required by certain roots and second, why are these suffixes substitutable. We will address these questions below, but before that, let's learn something about the non-substitutable plugs.

5.2.2 Non-substitutable plug

Unlike the substitutable plugs, the non-substitutable plug suffixes do not have a member to substitute them. Consider the verb ‘open’ again. The suffixes *ûr* and *ûk* can substitute each other on this verb, (26).

- (26) a. rug-**ûr**-a ‘X opens Y’
 b. rug-**ûk**-a ‘Y opens’

In contrast to the verb ‘open’ above, with the verb ngony-**ar**-a, ‘crease’, there is no member to replace *ar*, (27).

- (27) a. ngony-**ar**-a ‘X creases e.g a shirt’
 b. *ngony-X-a

ar is un-substitutable. Roots that have *ar* will always require *ar*.

The fact that suffixes like *ar* always occur with the root (are un-substitutable) raises a non-trivial question. How do we know they are suffixes? There are two sources of evidence for these bits being suffixes. First these bits occur in verbs that show a clustering of properties. We will examine these properties in a short while. Second, there exist one or two forms where these suffixes can be said to occur in independently occurring verbs. We can therefore be confident that they are suffixes.

Let us now turn to properties of non-substitutable plug suffixes. We start with the *ar* suffix. *ar* occurs in intransitive verbs that have a meaning of being in a particular physical position or state. All these verbs are intransitive, and they are listed in (28).³

- (28) a. tig-**ar**-a ‘remain’
 b. kind-**ar**-a ‘to place a bare bottom on the soil’
 c. kom-**ar**-a ‘squat’
 d. rig-**ar**-a ‘be surprised’
 e. manya-**ar**-a ‘to be trouble-ridden’
 f. amba-**ar**-a ‘to stoop’
 g. ngeny-**ar**-a ‘to have a frowned face due to some unpleasant feeling’
 h. ngony-**ar**-a ‘to be creased, e.g. a shirt’

³The *ar* suffix occurs on two verbs which are transitive, but when AR is added they become intransitive. Both verbs mean ‘to fold’:

- (i) a. kûtha ‘X folds Y’
 b. kûth-**ar**-a ‘Y gets folded’
 (ii) a. kûnja ‘X folds Y’
 b. kûnj-**ar**-a ‘Y gets folded’

ar is therefore a bonafide suffix.

The verbs with *ar* above share two additional properties. First, they all form transitives with the *i* causative morpheme. We illustrate this pattern with the verb ‘to crease’.

- (29) a. ngony-ar-a ‘Y (e.g a shirt) creases by itself’
 b. nyony-ar-**i**-a ‘X creases Y’

Second, verbs with *ar* rarely form the reversive, but when they do, they do so with a combination of the transitive morpheme *i*, and the reversive morpheme *ûk*.

- (30) ngony-ar-**ûk-i**-a ‘X uncreases Y’

These verbs cannot use a single morpheme *ûr*, which we saw encodes both transitivity and reversiveness.

- (31) *ngony-ar-**ûr**-a ‘X uncreases Y’

As with other verbs, just reversive is encoded by *ûk*.

- (32) ngony-**ar-ûk**-a ‘Y uncreases (by itself)’

There are two intransitive verbs ‘hang’ and ‘tire’ which behave like ‘crease’, although they do not have the *ar* plug suffix. Like verbs with *ar*, these verbs causativize with *i*. Thus in (33), ‘hang’, causativizes with *i*, and so does ‘tire’, (34).

- (33) a. cuura ‘Y (e.g. clothes) hang (e.g. on the cloth-line)’
 b. cuur-**i**-a ‘X hangs Y’

- (34) a. noga ‘be tired’
 b. nog-**i**-a ‘X e.g. work tires Y’

Like verbs with *ar*, these verbs form the reversive transitive with *ûk+i*, not with *ûr*. We illustrate this pattern of formation of the transitive reversive for ‘hang’ in (35), and for ‘tire’ in (36).

- (35) a. cuur-**ûk-i**-a ‘X takes Y from a hanging location’
 b. *cuur-**ûr**-a

- (36) a. **nog-ok-i-a** ‘X does work to rest Y’
 b. ***cuur-ûr-a**

We need to explain why verbs with *ar*, and the two intransitive verbs above form the reversive transitive with a separate form for reversive (*ûk*) and a separate morpheme for transitive (*i*). Why can't these these verbs use a single morpheme, *ûr*, which also is transitive and reversive?

We will address this issue below, but let us first examine two other non-substitutable plugs - *am* and *at*. We start with *am*.

am like *ar*, occurs in verbs that express a meaning of being in a particular position or state. As with *ar*, all the verbs with *am* are intransitive. I list them in (37).⁴

- (37) a. **kua-am-a** ‘bend’
 b. **ma-am-a** ‘sleep’
 c. **rûûng-am-a** ‘stand’
 d. **înd-am-a** ‘go down’
 e. **thend-am-a** ‘bend on one side’, e.g a vehicle

The verbs with *am* above cannot have a life without *am* - *am* is a non-substitutable plug.

The verbs with *am* resemble those with *ar* in another respect - all transitive with the *i*-causative morpheme. We demonstrate this for one of the verbs, ‘bend’.

- (38) a. **kua-am-a** ‘Y bends (by himself)’
 b. **ku-am-i-a** ‘X bends Y’

Furthermore, *am* verbs are like *ar* verbs in that they form the simple reversive with *ûk*, (39).

- (39) **ku-am-ûk-a** ‘Y unbends (by himself)’

⁴*am* can occur in an independently existing form:

- (i) a. **tiira** ‘X (e.g. a pole) supports Y (e.g. a house)’
 b. **tiir-am-a** ‘X stops at the edge of something’

This confirms *am* is a suffix.

These verbs however differ from verbs with *ar* in one crucial respect - they form the reversive transitive with *ûr*, (40a), not with a combination of the reversive *ûk* and the transitive *i*, (40b).

- (40) a. ku-am-**ûr**-a ‘X unbends Y’
 b. *ku-am-**ûk-i**-a

This pattern of formation of the transitive reversive with *ûr* for verbs with *am* is puzzling. One would have hoped to provide a simple account that verbs that transitive with *i* form the transitive reversive compositionally by addition of the reversive (*ûk*), and transitive (*i*). This is however not the case as the verbs with *am* show. It appears there is a deeper reason that rules out *ûk+i* in this context with *am*. We will try to provide this reason below.

Let us turn to the final morpheme - *at*. Roughly, this morpheme occurs in roots that have a meaning of contact. In fact it is sometimes labeled the contactive in Bantu (see. e.g Schadeberg (2003)). Furthermore, all the verbs with *at* are transitive, (41).

- (41) a. kumbata ‘embrace/get a handful of something’
 b. guata ‘hold’
 c. kamata ‘carry’
 d. atata ‘feel something by moving the hands’
 e. ambata ‘to go up’ (a ladder for example)
 f. thingata ‘follow’

This makes it very plausible that *at* encodes transitivity.⁵

Let us examine the other properties of the *at* suffix. Like the *ar* and *am* morphemes, the morpheme *at* also has the property that certain roots cannot exist without it. All the roots in (41) therefore would’nt occur without *at* - *at* is non-substitutable in its contexts.

How about the formation of the reversive transitive? Do these verbs with *at* pattern with verbs with *ar* (which use *ûk+i*), or do they pattern with verbs with *am* (which use *ûr*)? They pattern with *am* verbs. We demonstrate this for the verb ‘hold’ in (42).

⁵*at* can occur in an independently existing verb form confirming it is a suffix:

- (i) a. rûma ‘X bites Y’
 b. rûm-**at**-a ‘X gets a severe pain in the stomach’

- (42) a. gu-**at-ûr**-a ‘X makes Y un-hold - lose grip’
 b. *gu-**at-ûk**-i-a

Verbs with *at* would also form the reversive in the usual way, with *ûk*, (43).

- (43) gu-**at-ûk**-a ‘Y gets un-held - grip on Y is lost’

We need to account for the pattern of reversive transitive formation with *at* verbs above.

Transitive verbs that have no plug and are compatible with a reversive semantics e.g. ‘button’, (44a) behave like the verbs with the *at* plug above. They form the reversive with *ûk*, (44b), and the reversive transitive with *ûr*, (44c).

- (44) a. buung-a ‘X buttons Y’
 b. buung-**ûk**-a ‘Y gets unbuttoned’
 c. buung-**ûr**-a ‘X unbuttons Y’

The reversive transitive cannot be formed with a combination of the reversive *ûk* and the transitive morpheme *i*, (45).

- (45) *buung-**ûk-i**-a ‘X unbuttons Y’

As in previous contexts, *ûr* and *ûk* cannot be stacked on ‘button’ in whatever order, (46).

- (46) a. *buung-**ûr-ûk**-a
 b. *buung-**ûk-ûr**-a

There are other transitive verbs that behave like ‘button’ above in that they form the reversive with *ûk* and the reversive-transitive with *ûr*. We list some of them below.

- (47) a. ara ‘X spreads Y e.g. mat’
 b. ar-**ûr**-a ‘X gets Y from a spread state’
 c. ar-**ûk**-a ‘Y gets from a spread state’
- (48) a. amba ‘X sets Y e.g. a fishing net’
 b. amb-**ûr**-a ‘X unsets Y’
 c. amb-**ûk**-a ‘Y gets unset’

- (49) a. tega ‘X sets Y e.g a trap’
 b. teg-**ûr**-a ‘X unsets Y’
 c. teg-**ûk**-a ‘Y gets unset’
- (50) a. oga ‘X ties Y’
 b. og-**or**-a X unties Y’
 c. og-**ok**-a ‘Y gets untied’
- (51) a. tuma ‘X stitches Y’
 b. tum-**ûr**-a ‘X unstitches Y’
 c. tum-**ûk**-a ‘Y gets unstitched’
- (52) a. baanga ‘X arranges Y’
 b. baang-**ûr**-a ‘X disarranges Y’
 c. bang-**ûk**-a ‘Y gets disarranged’
- (53) a. înda ‘X plaits Y e.g hair’
 b. înd-**ûr**-a ‘X undoes plaited hair’
 c. înd-**ûk**-a ‘Y gets from a plaited state’
- (54) a. imba ‘X thatches Y’
 b. imb-**ûr**-a ‘X takes thatch from Y’
 c. imb-**ûk**-a ‘Y gets from a thatched state’

We need to account for the similarity between a transitive verb with a plug (*at*), and a transitive verb without a plug (button). Both verb forms form the reversive transitive with *ûr*, not a combination of *ûk+i*. We address this issue, and the other issues we have mentioned before in the next section.

5.3 Analysis

5.3.1 The issues

The core issues that we need to address are the following:

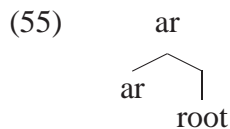
- that certain roots cannot exist without specific suffixes
- that some of these suffixes are substitutable while others are not

- that the suffix determines the nature of the transitive reversive

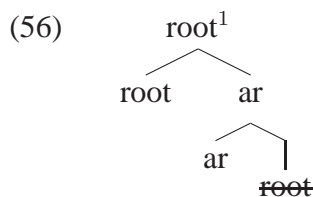
We address these issues below.

5.3.2 Syntax and lexical insertion in Kĩtharaka

Consider first *ar*, the non-substitutable suffix occurring in verbs such as ‘crease’. Since so far we have taken every suffix to be in its own functional projection, then we can do the same for *ar* - *ar* occupies a projection above the root, (55).



Since we have also used movement of a constituent containing the root to reorder base orders, we can re-order the base order of root and *ar* above by moving the root across *ar*, (56).



Consider now another related fact: that syntactic nodes carry syntactic features. For example we have seen that there is a syntactic node that encodes the features COERCE. We have indicated that the syntactic feature COERCE is realized overtly by the morpheme *ith*. Put in another language, the morpheme *ith*, spells out the features of the syntactic node COERCE, the morpheme *ith* is the phonological exponent of the node COERCE in syntax.

We can extend the same reasoning to *ar*. *ar* is the spell out of the features of some node in the syntax. But what are these features, and what is this node? We have seen already that *ar* is a plug suffix - a suffix that certain roots will always require. We can therefore say that *ar* spells out this plug feature in the syntax. For lack of a term, let us call the plug feature α . *ar* therefore is the phonological exponent of the plug feature α . The plug is a low position in the clausal hierarchy. It is immediately above the root.

Let us now turn to the two things we need to explain with verbs that have *ar*. One is that these verbs always require *ar*. The other thing is that these verbs form the reversive transitive with a combination of the reversive, *ũk*, and the transitive morpheme *i*.

Lets us start with the first issue: why some verbs always need *ar*. One way to capture the fact that certain lexical items almost always need others, is to say that the requiring item, and the one that is required form an idiom. To illustrate this, consider the famous ‘kick the bucket’ idiom. The transitive verb ‘kick’, in its regular transparent meaning, can take almost any object, ‘kick John’, ‘kick the basin’ ‘kick the bucket’, e.t.c. In the idiomatic sense of ‘pass away’ however, ‘kick’ cannot take ‘basin’ as its complement even though ‘basin’ has a spatial configuration similar to that of ‘bucket’. ‘kick’ requires ‘bucket’ in this nuance - they are an idiom. We can say the same for the cases with *ar* in Kîtharaka - certain roots require *ar* because such roots and *ar* are idioms. To be idiomatic, two elements need to be a constituent. Hence ‘kick’ and ‘bucket’ are a constituent, and root and *ar* are a constituent.

Let us turn to the second task. Why do to verbs with *ar* form the reversive transitive with *ûk+i*? In order to address this issue, we need to make some assumptions. The first assumption regards the syntax-phonology interface. We will assume late lexical insertion - that the replacement of syntactic features with phonological content occurs after syntax (McCawley (1968), Halle and Marantz (1993)). On this view, syntax manipulates only features, e.g. tense, transitive, by the usual operations of merge and move, and replacement of these features with some phonology happens after all syntax. This is a core assumption that now underlies much work in Distributed Morphology (Halle and Marantz (1993), Marantz (1997a), Marantz (1997b), Harley and Noyer (1999)). To illustrate this view, let us consider a context with two morphemes, a tense morpheme, and a transitive morpheme. Let us assume the phonology of the tense morpheme is *kû*, and that of transitive is *i*. Let us also assume that tense merges higher than transitive. Then (57a), involving merge of tense and transitive features is syntax, but (57), where the phonological exponents of tense and transitive merge in the syntax is disallowed (under this view).



It is only after syntax is done with its job therefore that the lexicon the store for the phonological exponents of syntactic features is visited to look for a good form to spell out the features in the syntax. (We make precise how the choice of the form is made below.)

The second assumption we need to make is that features of the items in the lexicon are arranged into a feature tree with a hierarchical structure, and that this hierarchical structure matches that of the features in the syntax (Starke class lectures). The trees in the lexicon differ from those in the syntax in that

the trees in the lexicon have some phonology. To illustrate this abstractly, consider a tree with three abstract features X, Y, Z, and assume that this tree can be pronounced as *bla*. The syntax will have the tree as in (58a), and in the lexicon we will have the same tree, but this time with the phonology of *bla*, (58b).



The third assumption is that lexical insertion is just a matter of matching trees in the syntax with trees in lexicon under some restrictions, which we will come to below. Thus when we match (58a) with (58b), in an operation called spell out, we get *bla*. If this kind of matching is allowed (as I show below), then it leads to another assumption. That spell out is possible for both terminal nodes, and non-terminals (McCawley (1968), Weerman and Evers-Vermeul (2002), Neeleman and Szendrői (2007), Abels and Muriungi (2008)). In (58), a tree with three phrasal projections is matched with a tree in syntax with three matching projections - this is phrasal spell out.

Idioms will be stored as constituents in the lexicon with some hierarchical structure, that can match the hierarchy of projections in the syntax.

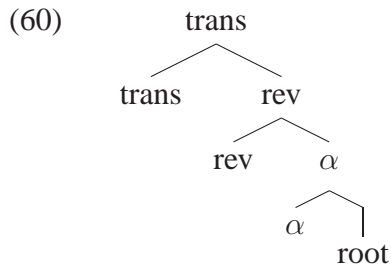
Let us show how these assumptions account for the patterns of insertion with verbs with *ar*. Consider first a simple case with the root and *ar*. In the initial step, we will deal with the syntax: we merge the *root*+ α . Then we visit the lexicon to see whether there is a lexical item that matches *root*+ α . For the roots that always have *ar*, we will find these roots+*ar* pre-bundled in the lexicon (since they are idiomatic and stored as a constituent), and we can insert the whole thing in syntax. We do lexical insertion by matching the tree in the syntax, with the sub-tree in the lexicon, and this gives us the phonology.

Let us turn to the other issue raised by verbs with *ar*? How come these verbs form the transitive reversive with a combination of reversive *ûk*, and transitive *i*? Before we can tackle this question, we need to know the hierarchy of reversive and transitive in the syntax. We can establish this by looking at the scopes. If transitive scopes over reversive, we expect a reading where an action by X undoes a state. If on the other hand, reversive scopes over transitive, we expect a reading where an action is done and then undone. The data facts show that transitive scopes over reversive, (59).

(59) Maria n-a-bung- **ûr-** ir-e cati
 1.Maria F-1.SA-button- REV.TR- PFV-FV 9.shirt

- a. ✓Maria did an event that lead the shirt to be in an unbuttoned state (the shirt was made by the machine buttoned)
 b. *Maria buttoned the shirt and then unbuttoned it.

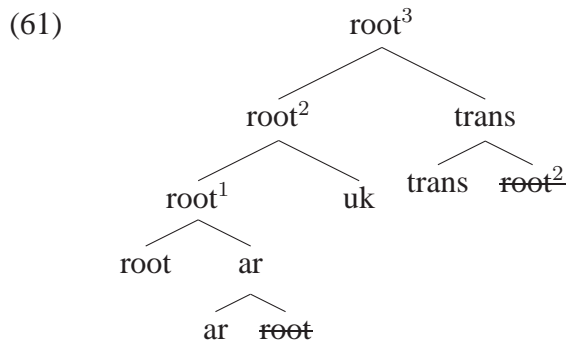
We therefore have the hierarchy of functional projections in (60): transitive scopes over reversive which scopes over α .



What we need to capture for the *ar* verbs is the following - that the three projections are spelled by different morphemes - α by *ar*, reversive by *ûk* and transitive by *i*. How exactly do we do this?

Suppose *root+ar+ûk* are also idiomatic, that is they are stored in the lexicon as a constituent. Then once we have built our syntax up to the reversive, and we visit the lexicon, we will find already a tree pre-bundled with the three items (*root+ar+ûk*), and we can insert it - we match the tree in the lexicon, with the one in the syntax.

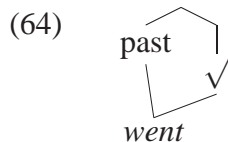
Suppose now we introduce the transitive projection, and visit the lexicon again to find items to spell-out the whole tree. This time we will not get any tree corresponding to the whole chunk since *root+ar+ûk+transitive* do not form an idiom. Transitive therefore has to be spelled out by a different morpheme, (61). By the elsewhere principle (see e.g. Kiparsky (1973) and subsequent work), *i*-causative will be inserted - it is the most specific form. This is how we get the *ûk+i* reversive transitive pattern in verbs with *ar*. The final derivation is a complete roll-up derivation with the three heads α , reversive and transitive getting a separate pronunciation.



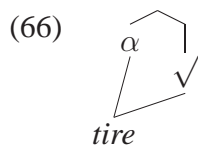
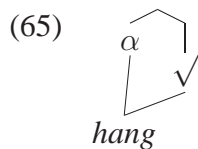
Consider now the two intransitive verbs ‘hang’, and ‘tire’, which behave exactly like verbs with *ar* except that they miss *ar*. Recall that like *ar* verbs, these verbs form the reversive transitive with *ûk+i*. We repeat the two examples here, (62) for ‘hang’, and (63) for ‘tire’.

- (62) a. cuur-**ûk-i**-a ‘X hangs Y’
 b. *cuur-**ûr**-a
- (63) a. nog-**ok-i**-a ‘X does work to rest Y’
 b. *nog-**or**-a

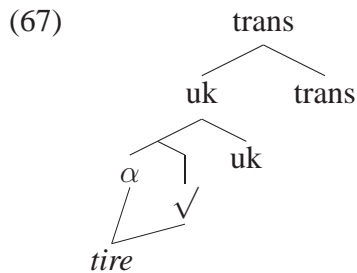
How do we capture this similarity between these two verbs and verbs with *ar*. Consider first the irregular verb ‘went’ in English. Since this verb also encodes past tense, a natural way to treat this verb is to say that it spells out both the features of the root, and past, as schematized in (64).



We can extend the same reasoning to the verbs ‘tire’ and ‘hang’. These verbs spell out the root, and α , as shown in (65), for ‘hang’, and (66) for ‘tire’.



If the above analysis of ‘tire’ and ‘hang’ is correct, we need to make two additional points to capture the pattern of reversive transitive formation for these verbs. The first is that like verbs with *ar*, these two verbs are idiomatic with the reversive - they are a constituent with the reversive in the lexicon. The second point is that the two verbs are not idiomatic with the transitive. Since these verbs are not idiomatic with transitive, then transitive has to be spelled out by a different morpheme which will be *i*, the most specific form. We demonstrate in (67), a structure with reversive and transitive getting a different spell out for the verb ‘tire’.

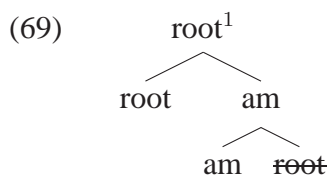


This completes our analysis of the issues raised by verbs with *ar*, and verbs behaving as though they have a silent *ar*, the verbs ‘hang’ and ‘tired’.

Let us now turn to the verbs with *am*. Recall that although these verbs transitive with *i*, they form the transitive reversive with *ûr*, not with *ûk+i*, (68). Why is this so?

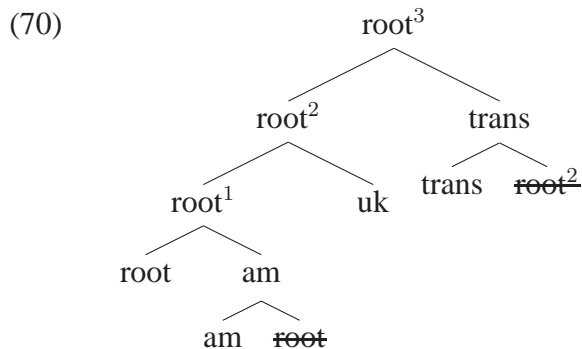
- (68) a. ku-am-**ûr**-a ‘X unbends Y’
 b. *ku-am-**ûk**-i-a

Let us go step by step. First because these verbs always come with *am*, we have to assume that these verbs are idiomatic with *am*. The initial step of the derivation is therefore exactly as with the *ar* verbs.

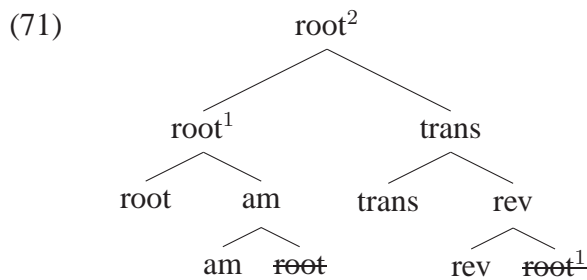


But what about the derivation across reversive and transitive? There are two derivations we can imagine here, both of which are allowed by the theory we have been pursuing in this thesis, the theory allowing only movements that contain the head, the verb in our context. One is a roll-up derivation: the root moves above *am*, root+*am* moves above reversive, and root+*am*+rev moves

above transitive, (70).

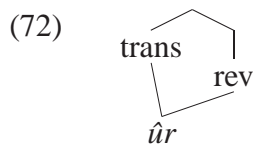


The second derivation, might involve cycling across part of the structure. Thus the root could move above *am* and then *root+am* moves spec-to-spec past reversive and transitive, without pied-piping the reversive, as shown in (71). (We have ignored here the intermediate landing site between transitive and reversive.)



Suppose we have a roll up derivation for the verbs with *am*, and suppose that only constituents can be spelled out by the same morpheme. Then we get the wrong result for verbs with *am*. We would expect the rerverive transitive to be $\hat{u}k+i$ with reversive and transitive being spelled out by different morphemes - reversive by $\hat{u}k$, and transitive by i .

Suppose the right derivation for verbs with *am* is the cyclic derivation - *root+am* cycle across reversive and transitive. Then this opens another possibility. Since the constituency of reversive and transitive is left undisturbed, the whole constituent can be spelled out by the same morpheme, as shown in (72).



This would give the right result - *root+am+ûr*.

But there are two other issues we need to address both of them perhaps related: (i) Why is it the cyclic derivation wins over the roll-up derivation? (ii) Why does insertion of *ûr* win over insertion of *ûk+i* in the non-idiomatic contexts?

Perhaps the cyclic derivation wins over the roll-up derivation because the cyclic derivation involves moving a smaller constituent than the roll-up derivation. The cyclic derivation moves just *root+am*, but the moved constituent in a roll-up structure increases in size with each step of movement.

Let us turn to the second issue - why does insertion of *ûr*, a morpheme that is both transitive and reversive win over/block insertion of a separate morpheme for reversive (*ûk*), and a separate morpheme for transitive (*i*). The answer to this might lie with a spell out principle, which I will call *the union principle*.⁶

Spell out of contiguous heads with a single morpheme wins over spell-out of such heads by individual morphemes if there exists a single morpheme in the lexicon with a superset of the features of the contiguous heads.

The morpheme *ûr* has the features transitive and reversive, which are a superset of the feature transitive that *i* causative has, and the feature reversive which *ûk* has. Insertion of *ûr* therefore blocks insertion of *ûk+i*.

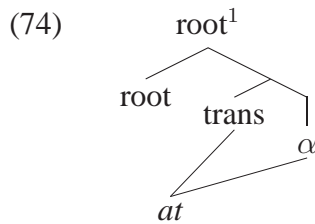
Consider finally when we have just reversive. Then *ûk* will be inserted, being a more specific form, by the elsewhere principle, (73).

(73) ku-am-**ûk**-a ‘unbend by self’

This brings us to the end of the discussion on the issues raised by *am* verbs. Let us turn to the verbs with *at*.

Recall that *at* is a plug suffix that cannot be substituted. Recall also that *at* occurs in verbs that are transitive, e.g. *gûata* ‘hold’. A natural hypothesis here is that *at* is a complex morpheme that spells out both α and transitive. If this feature content of *at* is the right one, then one would have to say that the root, moves past α and transitive cyclically leaving a constituent that can be spelled out by the same morpheme, *at*. This derivation is given in (74). We also show transitive and α being spelled out by *at*.

⁶This principle has its antecedent a long debate on blocking effects in grammar for which see e.g. Aronoff (1976), Kiparsky (1973), Poser (1992), and more recently Embick and Marantz (2008).



This derivation involving cyclic movement would win over the roll-up derivation because of the *union principle*.

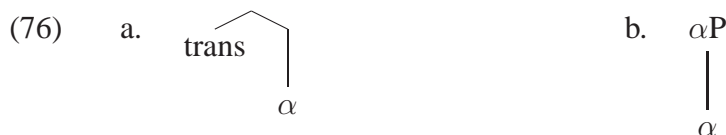
Let us turn to the pattern of reversive formation with verbs with *at*. These verbs form the reversive with *ûk*, (75a), but the reversive transitive with *ûr*, (75b), not *ûk+i*, (75c). *at* verbs therefore parallel the pattern of reversive formation found with the verbs with *am*.

- (75)
- a. *gu-at-ûk-a* ‘Y gets unheld - grip on Y is lost’
 - b. *gu-at-ûr-a* ‘X makes Y unhold - lose grip’
 - c. **gu-at-ûk-i-a*

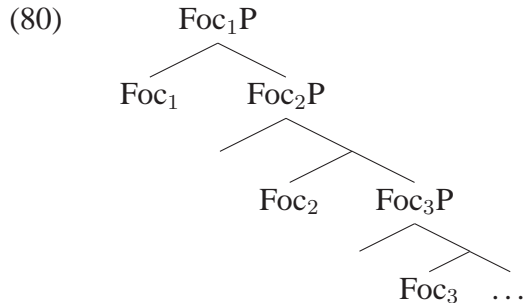
Let us account for these patterns. Let us start with simple reversive, (75a). This construction already raises a complication. How come *at* now occurs in a construction where a transitive reading is not available? Where has transitivity gone? What we need to say here is that a complex lexical item doesn’t need to realize its full potential in all syntactic contexts. Following Starke’s class lectures, let us call the reduction in the potential of a suffix (or even a root) shrinking. But what does shrinking derive from? Shrinking derives from the nature of a spell out principle *the superset principle* (see Starke class lectures, for some implementation see Caha (2007), Abels and Muriungi (2008)):

Insert a tree in the lexicon for a (sub) tree in the syntax, if the features of the tree in the lexicon are a superset of the features of the (sub) tree in the syntax. When lexical items compete for insertion, insert the minimal consistent superset from the lexicon.

Applied to our current context, this principle will allow *at* to be inserted in the syntax when there is both α and transitive, (76a), or when there is just α , (76b) (unless there is a specific form for α).



spells out at least three contiguous heads in the left periphery of the clause, Foc_1 , Foc_2 and Foc_3 in (80).



Abels and Muriungi assume that the tree of the focus marker in the lexicon is similar to the tree in the syntax. (80) would therefore be the tree in the lexicon, and the syntax, but the tree in the lexicon would have some phonology, say n .

The third assumption which Abels and Muriungi make, and which we have already seen is that lexical insertion is governed by the superset principle (following Starke class lectures).

The fourth crucial assumption the two authors make is that the spell out domain must be linked to the lowest member, that is a lexical item such as the focus marker can only be inserted if the low member Foc_3 above is present in the syntax. Thus the focus marker can be inserted for Foc_3 , Foc_2 and Foc_1 , but not anywhere else. This enables them to capture the inclusion relations between the various uses of the focus marker. Since this condition is motivated empirically elsewhere, we will assume it here (see however Abels and Muriungi (2008) for details).

Having laid some theoretical ground, let us get back to the patterns of insertion with *at* verbs. *at* can shrink to just α , by the superset principle, and by a condition that allows shrinking only in the bottom-ward direction.

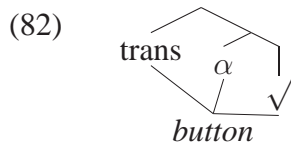
After the shrinking of *at* to just α , then insertion of the reversives will proceed in the usual way. When there is just reversive, $\hat{u}k$ will be inserted being the more specific form. For the transitive reversive, we will run both the roll-up and cyclic derivations across reversive and transitive. The cyclic derivation will win being consistent with *the union principle*, hence we get $\hat{u}r$ not $\hat{u}k+i$. We also need to assume that verbs with *at* are not idiomatic with the reversive projection. If they were, we would expect there to be an idiom in the lexicon with root-*at*- $\hat{u}k$. Transitive would then be spelled out by a different head, i , the specific form. This form is however ungrammatical: *root-*at*- $\hat{u}k$ - i - a .

The analysis of AT verbs above will also extend to directly to transitive verbs that lack *at*, e.g ‘button’. Recall ‘button’ (and other transitive verbs

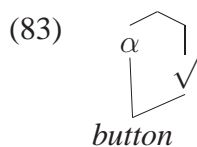
compatible with a reversion semantics) form the reversion with $\hat{u}k$, (81b) and the reversion transitive with $\hat{u}r$, (81c). The reversion transitive cannot be formed with $\hat{u}k+i$, (81d).

- (81) a. buunga ‘X buttons Y’
 b. buung- $\hat{u}k$ -a ‘Y gets unbuttoned’
 c. buung- $\hat{u}r$ -a ‘X unbuttons Y’
 d. *buung- $\hat{u}k$ -i-a ‘X unbuttons Y’

Let us account for the patterns in (81). First we need to assume that like verbs with *at*, transitive verbs like ‘button’ also spell out α , the lowest projection. Since these verbs are transitive, they also spell out the transitive projection. We show in (82), ‘button’ spelling out the part with the root ($\sqrt{\quad}$), α , and transitive.



The other assumption we need to make is that like *at*, the transitive verb can shrink to just α - it doesn’t need to realize its potential in all context: Thus button can as well lexicalize just root and α , (83) (due to the superset principle and the requirement to shrink in the bottom-ward direction).



Given that ‘button’ has shrunk to just α in (83), then the patterns of insertion of the reversives will continue as we saw for transitive verbs with *at*. With just reversion, $\hat{u}k$ will be inserted being the more specific form.

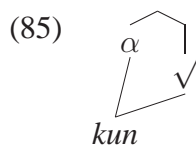
When there is reversion and transitive, $\hat{u}r$ will win over $\hat{u}k+i$ being consistent with *the union principle*, and given an assumption that ‘button’ is not idiomatic with reversion.⁷

⁷There is an issue here of why the transitive verb ‘button’ cannot shrink in the absence of reversion or some other morpheme. In fact there is a more general issue. Since shrinking will generally be allowed, given the superset principle, why can’t transitive verbs generally be used as intransitives? We do not have an answer for this problem.

Let us now come to the substitutable cases. First we start with the verbs showing the three way alternation. Let us illustrate this class with the cover example. Recall that these verbs have three morphemes that substitute each other: *ik* which is transitive, (84a), *ur* which is transitive and reversible, (84b), and *uk* which reversible, (84c).

- (84) a. kun-**ik**-a ‘X covers Y’
 b. kun-**ur**-a ‘X uncovers Y’
 c. kun-**uk**-a ‘Y gets uncovered’

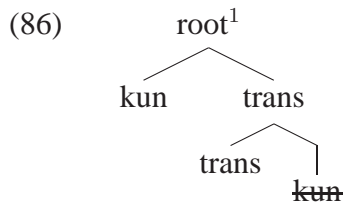
How does insertion work for these cases? In order to capture the pattern of reversible formation for verbs such as ‘cover’ above, we need to assume that roots such as ‘kun’ above spell out at least the root, as well as the α projection, as schematized in (85).



If the above structure is the right one for these roots, then the spell out patterns for the reversible follow the pattern we have already seen. When there is reversible alone, *uk* will be inserted, being the more specific form, and when there is reversible and transitive, *ur* will be inserted, by *the union principle*.

Let us turn to the insertion of the transitive *ik*. Here we have a problem because there are at least two other morphemes that encode transitivity, the *i* causative, and *at*. These morphemes potentially are in competition with *ik* for spell out of the transitive projection. How do we capture the fact that in the context of roots such as *kun* above, *ik* blocks insertion of the two other morphemes that can convey transitivity, *i* and *at*? In order to capture the fact that insertion of *ik* wins over other potential candidates in contexts with roots like *kun*, we need to say that insertion of one stored lexical item overrides insertion of lexical items by bits into the syntactic nodes. In other words, an idiomatic form will block a compositional form being already stored as a unit in the lexicon. This condition has the flavour of the *union principle*.

To concretize the claim above, roots such as *kun* will select the transitive projection idiosyncratically, that is, there will be a stored form in the lexicon with *kun+ik*, as shown in (86).

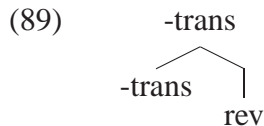
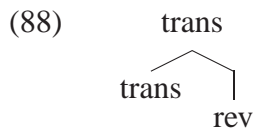


This form will override all other possible insertions of just transitivity in the context of *kun*.

Finally, let us examine the verbs showing a two way alternation. We repeat one verb here.

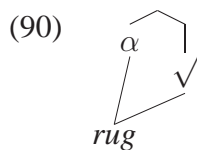
- (87) a. rug-**ûr**-a ‘X opens Y’
 b. rug-**ûk**-a ‘Y opens’

These verbs raise a problem because they do not have a clear reversive semantics. This makes it tempting for one to think that in these contexts *ûr* is spelling out just transitive, and *ûk* something else, e.g. [-transitive] if we work with an equipollent feature system. This account will however face an obvious problem. Since the feature hierarchy of *ûr* and *ûk*, in this case would be as in (88), and (89), with [\pm transitive] above reversive, we would be saying that these morphemes do not observe *the bottommost requirement* on insertion.



It seems we don't want to go this way.

One way to handle this class of verbs is to say that they are actually reversive, and that the fact that they do not have the positive member makes their reversive meaning less prominent. This way of viewing things is supported by the fact that these can never be reversed by adding another reversive morpheme - this is because they are already reversive. If this reasoning is fine, then we can extend the analysis of the verbs showing the three way alternation above to these verbs: roots such as *rug* spell out the syntax up to α , (90).



When there is just reversion $\hat{u}k$ is inserted being the most specific form and $\hat{u}r$ when there is both reversion and transitive, by *the union principle*.

This brings us to the end of the discussion on how the various suffixes determine the nature of the reversives.

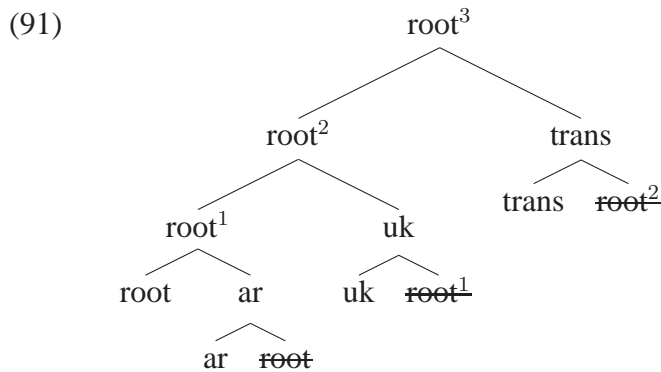
Let us now address the last issue - the difference between substitutable suffixes and the non-substitutable suffixes.

The easiest way to capture the difference in two classes is just to say these forms are idiomatic. Let us first see how this will capture the non-substitutability with *ar*, *am* and *at*. Since certain roots will be idiomatic with these suffixes, and that all these suffixes are as low as α then it follows that no root will take more than one of these suffixes- the roots idiosyncratically select the α projection.

Let us turn to the substitutable suffixes. Recall that there are three suffixes that substitute each other: transitive $\hat{i}k$, reversion+transitive $\hat{u}r$ and reversion $\hat{u}k$.

Consider first how the statement that $\hat{i}k$ is idiomatic with the root ensures that that $\hat{i}k$ is substitutable with both $\hat{u}r$, the reversion transitive and $\hat{u}k$, the reversion. The roots that have $\hat{i}k$ for transitive, will already be stored in the lexicon as a constituent with the root. Such roots will therefore be inserted in the syntax only when root+transitive are a constituent. Since the reversion projection is lower than transitive, whenever this low projection is occupied, then root+ $\hat{i}k$ cannot be inserted in the syntax, because there will be no constituent that matches just this lexical item - a constituent with just transitive+root.

Let us turn to the reversion $\hat{u}k$ and the reversion transitive $\hat{u}r$. We have a difficulty here in accounting for the substitution of the two suffixes based on the idiom story. The difficulty comes because of the following. We want roots with the two suffixes to be idiomatic, and still maintain some level of compositionality. If we allow *root+ $\hat{u}k$* to be purely idiomatic, we would face a problem of accounting for why we cannot have reversion transitives of the form *root+ $\hat{u}k+i$* , for the verbs showing the two way and three way substitution. Since the root is idiomatic with $\hat{u}k$, we expect a derivation like the one we saw for verbs with *ar*, where transitive, which is not part of the idiom, is spelled out by a different morpheme. We repeat the derivation for verbs with *ar* in (91).



We want to rule this derivation for the substitutable suffixes.

It is clear what we need to do here. We need to ensure that the root+reversive is an idiom, yet an idiom that is a bit transparent to the effects of the union principle. We need the union principle to be operative in the idioms so that we have the *ûr* pattern for the reversive transitive, not *ûk+i*. One way to achieve the effect we want is just to state that although root+ûk forms for the verbs showing the three way alternation are idiomatic, they are not fully frozen idioms. The *union principle* can therefore have effects in them.⁸

To summarize, we have argued in this section that certain roots require certain suffixes because they are idiomatic with them. We have then gone to show that the way the transitive reversive gets spelled out depends on an interplay of factors. The first is how big the idiomatic chunks are. If the idiomatic chunk is as big as the reversive, then we get the *ûk+i* pattern - this gives us the pattern of insertion for verbs with *ar* and two intransitive verbs (hang, tired). If the idiomatic constituent is as big as α , then we get another factor influencing the output, *the union principle* which prefers phrasal spell out. We then get *ûr* in these cases -this is the insertion pattern for all transitive verbs, and the intransitives with *am*. Finally we have captured the difference between substitutable and non-substitutable suffixes by claiming that this follows from the idiomatic nature of certain roots and these suffixes.

Before we can turn to showing how this low zone fits into the overall clausal structure of Kĩtharaka, we confirm below that these suffixes are indeed low in the clause by showing that they take scope very low in the clause.

⁸In fact idioms are not always frozen. Thus (Harley 1995:pg. 74) shows that ‘kill’ in the idiomatic sense of ‘finish’ can take variable objects: one can kill milk, peanuts or baked Alaska.

5.4 Scope below coerce

The suffixes we have looked take scope very low in the clausal hierarchy. Just to give some illustration, consider the scopes between the reversive and COERCE, a morpheme that is also relatively low in the clausal hierarchy. If the reversive scopes below COERCE we expect a reading where a state embedded under COERCE is undone. Alternatively, if the reversive scopes over COERCE, we expect a reading where coercion is undone. The facts show that the reversive takes scope under coercion, (92).

- (92) Chibû n-a-ku- **am-** **ûr-** **ith-** iir-i-e borisi a-bungwa
 1.chief F-SA₁-bend- AM- REV.TR- CRC- PFV-IC-FV 2.police 2-prisoner
- a. The chief coerced the police to unbend the prisoners
 b. *The chief coerced and then uncoerced (=begged) the police to bend the prisoners

By transitivity, COERCE also scopes over α , by spell-out principles (spell out by the same morpheme only possible for constituents, transitivity must be below COERCE - transitive and reversive can be spelled out by *ûr*. (I discuss these scopes in more detail in the next chapter (chapter 6).)

5.5 The whole derivation at a glance

Let us summarize this chapter by considering how the whole derivation unfolds, now that that we have looked at the lowest suffixes. Before we can get to the derivation however, let us remind ourselves of the hierarchy of the affixes. This hierarchy is summarized in (93). I have demarcated the various zones we have looked at with boxes, for convenience. These zones can also be identified by different capital letter subscripts.

- (93)

G_{pa}	>	F_{pref}	>	E_{fv}	>	$D_{hab...}$	>	$C_{abl>err}$	>	B_{crc}	>	$A_{trans>rev>\alpha}$	>	R
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This is the surface order:

- (94) F(prefixes)+root+A+B+C+D+E+G(plural addressee)

Let us remind the reader about these zones briefly:

- A is the zone with the lowest suffixes (this chapter). Their hierarchy:
 TRANSITIVE>rev> α

- B is a zone with just COERCE.
- C is the zone containing ABLE and ERRATIC, morphemes that show a left to right scope.
- D is the highest cyclic zone with HAB > APPLICATIVE > ABLE2 > PERFECT > INNER CAUSATIVE > PASSIVE. These morphemes show left to right scope.
- E is a zone containing the final vowel - the final vowel merges between the prefixes and the habitual.
- F is the zone with the prefixes (for simplicity, I ignore the fact the two prefixes the OBJECT MARKER and the REFLEXIVE merge lower than HABITUAL)
- G is the highest zone, with just the PLURAL ADDRESSEE

The surface order then derives in the steps below:

- The root (R) rolls or cycles across A. The cyclic derivation occurs when the reversive and transitive are spelled out by the same morpheme (*ûr*), or when transitive and α are spelled out by the same morpheme (*at*), by the union principle.
- Root+A rolls across B
- root+A+B cycles across C
- root+A+B+C cycles across D
- root+A+B+C+D rolls across E (containing the final vowel)
- (some) prefixes are merged: F+root+A+B+C+D+E
- F+root+A+B+C+D+E moves across G: F+root+A+B+C+D+E+F+G

The important discovery thus far is that the root does not always move in a roll-up fashion. In Zone C and D, the root undergoes cyclic movement. In zone A, the root may undergo cyclic movement when reversive and transitive, or transitive and α are spelled out by the same morpheme. These facts with root moving cyclically are the ones that have lead us to the conclusion that the principles governing the ordering of affixes on the verb are similar to those that govern the ordering of modifiers in the NP- the surface order arises from the scopal order through movements that contain the head of the phrase, the verb in our case. The whole derivation thus far has been shown to be

doable within this machinery strongly suggesting the syntax of free standing modifiers of a head (Dem Num Adj), and that of phonologically deficient heads (e.g. FOCUS MARKER, HABITUAL, COERCE) are very similar.

Chapter 6

The argument zone

We haven't discussed in any detail a few morphemes between the reversive and the cyclic zone containing *ABLE* and *ERRATIC*. These morphemes are *ith*, the external causative morpheme, *AN*, a morpheme ambiguous between a reciprocal and a human unspecific indefinite (someone), and *APPL-D*, an optional double of the applicative. We give further details about these morphemes in this chapter.

We demonstrate in this chapter that we need to allow some morphemes that are arguments, or argument introducing to move independent of the root - this is a weakening of our dragging movement theory.

6.1 *ith*- causative

ith is the external causative morpheme. It expresses coercive causation. We can demonstrate the coercive behavior of *ith* by the sentence in (1). This sentence is felicitous in a context where the doctor threatens the children, (1a), but not in a context where the doctor casually asks the children to take medicine, (1b).

- (1) Ndogita n-a-nyu- **ith**- iir-i-e tû-ana ndawa
1.doctor F-SA1-drink- CRC- PFV-IC-FV 13-child 10.medicine
Literal: the doctor coerced the children to swallow/take medicine.
- a. ✓The doctor threatened the children with a whip, and they took the medicine.
- b. *The doctor casually asked the children to take the medicine and they took the medicine.

Let us turn to the position of *ith* in the hierarchy of the clause. Its position is easy to establish. We know from chapter 1 that *ith* scopes below ERRATIC, on the irregular reading of this morpheme, (2). *ith* must therefore merge below ERRATIC in the clausal hierarchy.

- (2) Nasi n-a-nyu- ***ith***- ***ang***- ir-i-e Maria ndawa
 1.nurse F-SA₁-drink- CRC- ERR- PFV-IC-FV 1.Maria 10.medicine
- a. ✓ At 7am, 7.50 am, 9.00 am, 11. am, the nurse coerced Maria to take medicine, and she finally took the medicine. (Maria belongs to a sect that does not accept taking medicine.)
- b. *Once, the nurse coerced Maria to take medicine at 7am, 7.50 am, 9.00 am, 11. am. (taking this drug so often could be harmful to health.)

We also know that *ith* scopes above the REVERSIVE (chapter 5). In (3), it is the embedded state that is reversed, not coercion. *ith* therefore merges above REVERSIVE in the clausal hierarchy.

- (3) Chibû n-a-ku-am- ***ûr***- ***ith***- iir-i-e borisi a-bungwa
 1.chief F-SA₁-bend-AM- REV.TR- CRC- PFV-IC-FV 2.police 2-prisoner
- a. ✓ The chief coerced the police to unbend the prisoners.
- b. *The chief coerced and then uncoerced (=begged) the police to bend the prisoners.

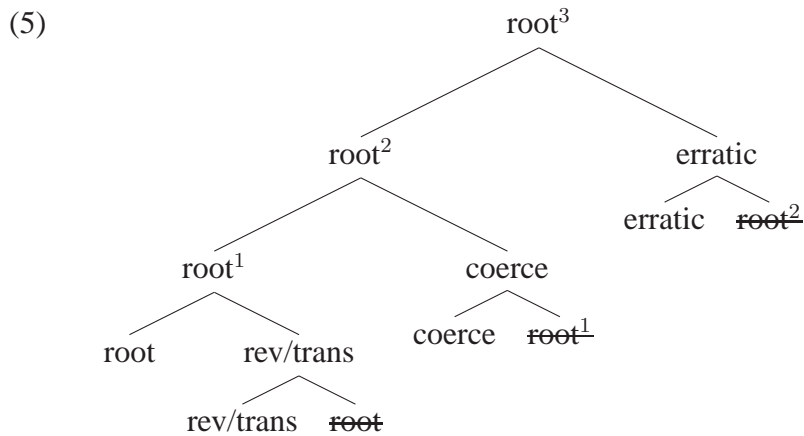
We also have evidence that *ith* scopes OVER TRANSITIVE- *ith* coerces a transitive action whenever it embeds a transitive verb. Thus in (2), what is coerced is a transitive action of the children taking the medicine. We therefore also want *ith* to be above TRANSITIVE.¹

Since we know the scopes, (3), and we also know the surface order, (4), then we know the derivation of the part around *ith*. (Let us consider here a case where transitive and reversive are expressed by a single morpheme (*ûr*), and let us pretend that transitive and reversive are a single head (see however chapter 5).

¹We currently have two positions for TRANSITIVE in the clause. One low in the clause, below *ith*, and another above *ith* in the habitual-perfect zone (the position realized by *i* causative). The way to account for this double (sometimes triple) positioning of transitivity is a problem that confronts anybody who ventures into transitivity in Bantu (see e.g. Hyman (1994), Hyman (2003b), Hyman (2003a), Good (2005)). We will provide a novel account of this double positioning in section 6.7.

- (4) a. ERRATIC > COERCE > TRANSITIVE/REVERSIVE > root
 b. root < TRANSITIVE/REVERSIVE < COERCE < ERRATIC

The to get the surface order, root-REVERSIVE/TRANSITIVE-COERCE-ERRATIC, we would have a complete roll-up derivation. This is shown in (5).



6.2 Two ANs

While the derivation with COERCE is easy to establish, things are more problematic with AN and APPL-D. But first, we need to distinguish the two ANs.

AN has two positions in the sequence of suffixes. One before COERCE, (6a), and the other after COERCE, (6b). The two ANs can co-occur, (6c).

- (6) a. Mû-borisi n-a-thamb- **an- ith-** iir-i-e mû-bungwa
 1-police F-SA₁-wash- AN- CRC- PFV-IC-FV 1-prisoner
 ‘The policeman coerced the prisoner to wash someone.’
- b. Mû-borisi n-a-thamb- **ith- an-** iir-i-e mû-bungwa
 1-police F-SA₁-wash- CRC- AN- PFV-IC-FV 1-prisoner
 ‘The policeman coerced the prisoner to wash someone.’
- c. Mû-borisi n-a-thamb- **an- ith- an-** iir-i-e mû-bungwa
 1-police F-SA₁-wash- AN- CRC- AN- PFV-IC-FV 1-prisoner
 ‘The policeman coerced the prisoner to wash someone.’

In order to understand these two positions of AN, it is important to understand their scopes. The two positions correspond to different scopes.

Consider first the case when AN precedes *ith*. In this position, AN can only be an object.

- (7) Mû-borisi n-a-thamb- **an- ith-** iir-i-e mû-bungwa
 1-police F-SA₁-wash- AN- CRC- PFV-IC-FV 1-prisoner
- a. ✓The policeman coerced the prisoners to wash someone.
 b. *The policeman coerced someone to wash the prisoners.

AN, when it occurs before COERCE, must also be an object in a context with three arguments namely an applied argument, the embedded external argument, and the direct object. I will refer to these three arguments as non-subject arguments. In order to show this behaviour of AN, we need to get one argument out of the post-verbal position for example by *wh*-movement. This is because three full DPs are not allowed post-verbally in Kîtharaka. Although AN does not count for the ‘no three DP post-verbally restriction’, the presence of two other arguments post-verbally in the presence of AN makes it slightly difficult to establish the readings. We will therefore *wh*-move one argument, and have only two arguments post-verbally. (We should emphasize here that this movement does not change the patterns, it just makes the judgements easy to establish.)

The sentence in (8) shows AN preceding *ith* can be an object even with the three non-subject arguments present.

- (8) N-ûû a-thamb- **an- ith-** î-ir-i-e mû-geni
 F-who SA₁-wash- AN- CRC- APL-PFV-IC-FV 1-visitor
 ‘For whom did he coerce the visitor to wash someone?’

(9) shows that AN preceding *ith* cannot be the external argument, (9a) or the applied argument, (9b).

- (9) *I-mbi a-thamb- **an- ith-** î-ir-i-e mû-geni
 F-what SA₁-wash- AN- CRC- APL-PFV-IC-FV 1-visitor
- a. cannot mean: what did he coerce someone to wash for the visitor?
 b. cannot mean: what did he coerce the guest to wash for someone?

Let us turn to the readings when AN follows *ith*. In this position AN can be an object, the external argument, or the applied argument. Consider first a simple case with just COERCE. Here AN can be the object, (10), or the external argument, (11).

- (10) Ndogita n-a-thamb- **ith-** **an-** iir-i-e nasi
 1-doctor F-SA₁-wash- CRC- AN- PFV-IC-FV 1-nurse
 ‘The doctor coerced the nurse to wash someone.’
- (11) Mw-arimû n-a-thamb- **ith-** **an-** iir-i-e rû-thingo
 1-teacher F-SA₁-wash- CRC- AN- PFV-IC-FV 11-wall
 ‘The teacher coerced someone to wash the wall.’

Let us turn to contexts with three non-subject arguments. In these contexts, AN can be the direct object, (12).

- (12) N-ûû a-thamb- **ith-** **an-** î-ir-i-e mû-geni
 F-who SA₁-wash- CRC- AN- APL-PFV-IC-FV 1-visitor
 ‘For whom did he coerce the guest to wash someone?’

AN can also be the external argument and the applied argument, (13a), (13b).

- (13) I-mbi a-thamb- **ith-** **an-** î-ir-i-e mû-geni
 F-what SA₁-wash- CRC- AN- APL-PFV-IC-FV 1-visitor
- a. What did he coerce someone to wash for the guest?
 b. What did he coerce the guest to wash for someone?

We can make the following conclusion: AN preceding *ith* is always low (it can only be an object), but AN following *ith* can be low or high (all the three post-verbal arguments). I will refer to the AN preceding *ith* as AN1, and the AN following *ith* as AN2. To refer to AN when it has the high reading (non-object), I will use high AN.

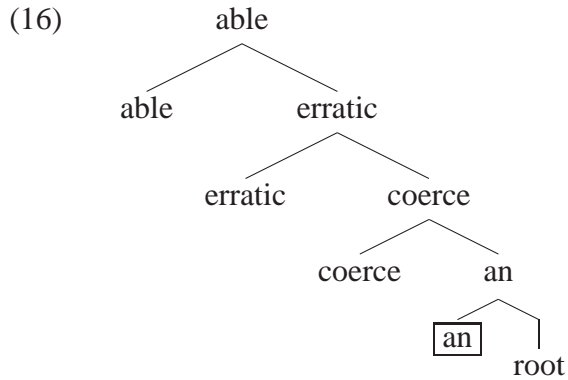
What about the position of high AN in the clausal hierarchy? Where does it merge? We have a problem because there are three derivations for the surface position of high AN. High AN could merge in three different places. To show this, consider the three suffixes ABLE, ERRATIC, COERCE. The scopal order of these morphemes is as in (14a), and the linear order as in (14b).

- (14) a. ABLE > ERRATIC > COERCE > root
 b. root < COERCE < ABLE < ERRATIC

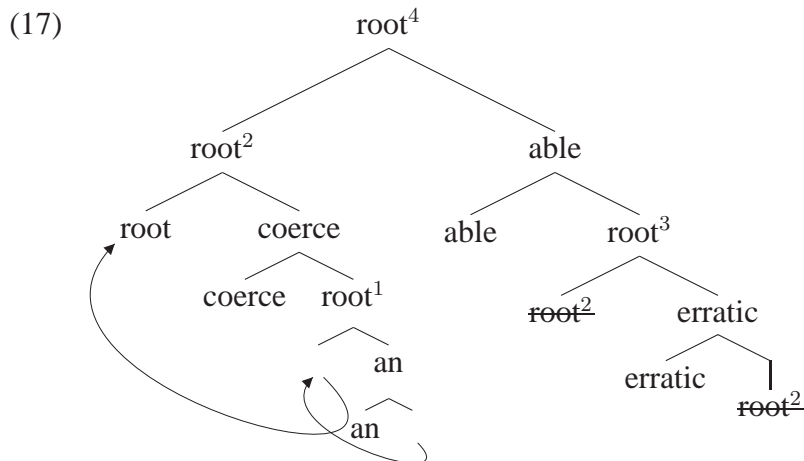
Linearly, AN2 appears between COERCE and ABLE, (15).

- (15) root-COERCE < AN < ABLE < ERRATIC

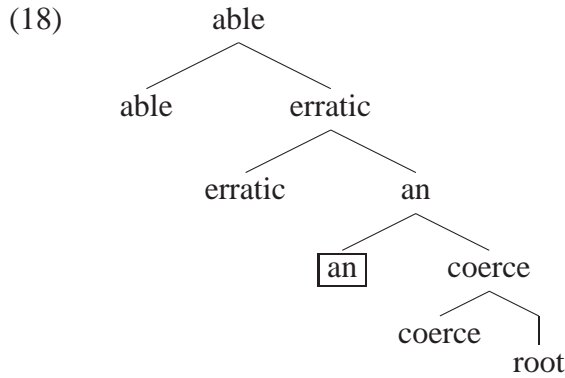
Considering the three suffixes, and given the linear position of AN, AN could be in three different positions. First, AN could be below COERCE, as shown in (16).



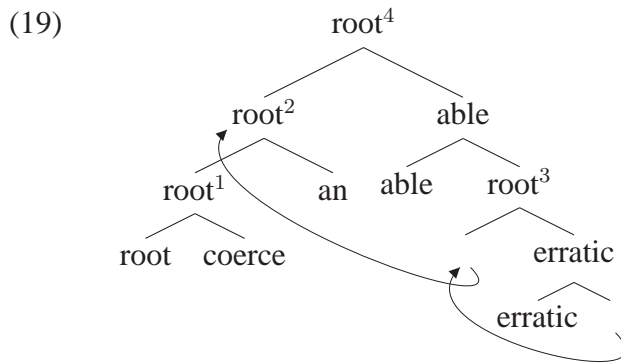
To get the surface order (root-COERCE-AN-ABLE-ERRATIC), the root would cycle past AN and COERCE, root-COERCE-AN would then cycle past ERRATIC and ABLE. This derivation is given in (17).



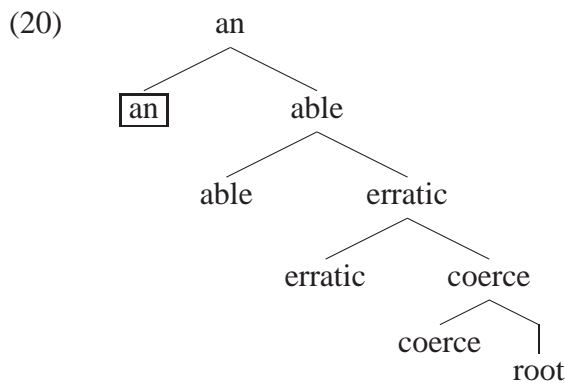
High AN could also merge in another position: immediately above COERCE, (18).



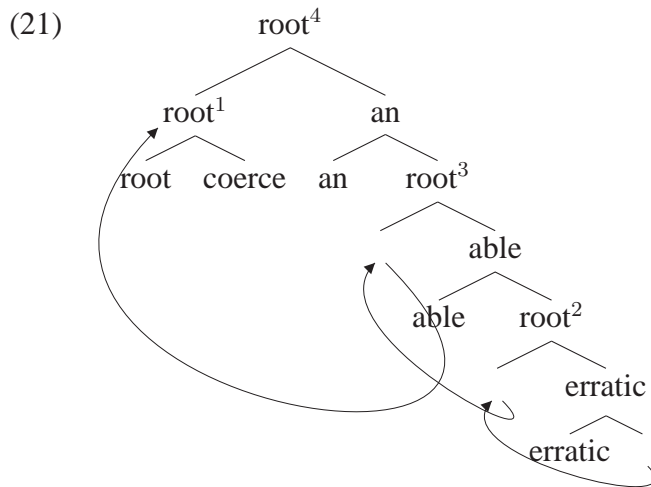
To get the surface order, the root would roll past COERCE and AN, and then root-COERCE-AN would cycle across ERRATIC and ABLE. This would give the right surface order: root-COERCE-AN-ABLE-ERRATIC. We give this derivation in (19).



Finally, high AN could merge above ABLE, (20).



To get the surface order, the root would move above COERCE, and root-coerce would move cyclically past ERRATIC, ABLE and AN. This is shown in (21).



So how do we know which of these derivations is the right one? Where does high AN merge?

There is a preliminary hint that the derivation taking high AN to merge below COERCE is the right one. AN can never be the coercer. We will resolve the issue of the merge of high AN by a new methodology - binding generalizations. But first let us look at the APPL-D since we will use the same methodology to resolve the issue of where it is merged.

6.3 APPL-D

The applicative double (APPL-D) is always found as a second occurrence - it is dependent on another applicative. The applicative double is found in very specific contexts - it is triggered only in the presence of AN2 or ABLE. Let us illustrate these two requirements on APPL-D. Consider first a sentence with the APPLICATIVE that linearly follows the HABITUAL, (22). This APPLICATIVE does not require a double.

- (22) Maria n-a-og-ag- îr- a Jane nkû
 1.Maria F-SA1-tie-HAB- APL- FV 1.Jane 10.firewood
 'Maria usually ties firewood for Jane.'

In contrast, when the APPL-D occurs, the APPLICATIVE after the HABITUAL must also occur, (23). This example shows the doubling of the applicative being triggered in the context of AN2.

- (23) Mû-borisi n-a-og- **er**- an-ag- *(îr)- a chibû
 1.police F-SA₁- APL- AN-HAB- APL- FV 1.chief
 ‘The policeman usually ties someone for the chief.’

The APPL-D can also occur in the context of ABLE, (24).

- (24) Maria a-gû-tum- **îr**- îk- îr- a î-rinda
 1.Maria SA₁-T-sew- APL- ABL- APL- FV 5-dress
 ‘Maria was easy to sew a dress for.’

There is no meaning difference detectable between a sentence with APPL-D and one with a single occurrence of the applicative. Whatever meaning exists in the doubling case, also exists when there is no doubling.

Also, we cannot test the scope of the applicative double with *ith*, because this applicative is incompatible with *ith*.

- (25) *?I-mbi a-thamb- **ith**- **îr**- an- î- ir-i-e mû-geni
 F-what SA₁-wash- CRC- APL- AN- APL- PFV-IC-FV 1-visitor

So if scope does not tell us where APPL-D merges, how are we going to locate APPL-D in the hierarchy of the clause. The binding generalization will enable us establish the base position for the APPLICATIVE. We establish this generalization in the next section.

6.4 The binding generalization

In order to establish the binding generalization, we examine the patterns of co-indexation with AN in its other reading - the reciprocal meaning.

Consider first the binding pattern with AN1. In a sentence with just CO-ERCE, the only co-indexation possible is between the external argument and the direct object, (26).

- (26) Mû-borisi n-a-thamb- **an-ith**- iir-i-e a-bungwa
 1-police F-SA₁-wash- AN- CRC- PFV-IC-FV 2-prisoner
 ‘The policeman coerced the prisoners to wash each other.’

The coercer and the external argument cannot be co-indexed, (27a), and neither can the coercer and the direct object, (27b).

- (27) *Borisi i-ba-thamb- **an- ith-** iir-i-e mû-bungwa
 2-police F-SA₁-wash- AN- CRC- PFV-IC-FV 1-prisoner
- a. Cannot mean: the policemen coerced each other to wash the the prisoner.
- b. Cannot mean: the policemen coerced the prisoner to wash each other.

The same pattern is maintained in a context with three post-verbal arguments - an applied argument, the external argument and the direct object. Only the external argument and the direct object can be co-indexed. (28) shows this licit co-indexation between the external argument and the direct object.

- (28) I-mw-ekûrû û-rîkû a-thamb- **an- ith-** î-ir-i-e tw-ana
 F-1-woman 1-which SA₁-wash- AN- CRC- APL-PFV-IC-FV 13-child
 ‘For which woman did he coerce the children to wash each other?’

The coercer and the applied argument cannot be co-indexed, (29).

- (29) *I-mbi ba-thamb- **an- ith-** î-ir-i-e mû-bungwa
 F-what SA₂-wash- AN- CRC- APL-PFV-IC-FV 1-prisoner
 Cannot mean: What did they coerce the prisoner to wash for each other?

And the coercer and the external argument cannot either, (30).

- (30) *I-mu-nene û-rîkû ba-thamb- **an- ith-** î-ir-i-e obisi
 F-1-boss 1-which SA₂-wash- AN- CRC- APL-PFV-IC-FV 9.Office
 Cannot mean: For which boss did they coerce each other to wash the office?’

Co-indexation is impossible between the applied and the external argument, (31a). Note that (31), is grammatical on the reading in (31b), where the external argument and the direct object are co-indexed.

- (31) I-mbi a-thamb- **an- ith-** î-ir-i-e a-bungwa
 F-what SA₁-wash- AN- CRC- APL-PFV-IC-FV 2-prisoner
- a. * What did he coerce the prisoners to wash for each other?
 b. ✓ For the benefit of what did he coerce the prisoners to wash each other?

The coercer and the direct object cannot be co-indexed, (32).

- (32) *I-mu-coore û-rîkû ba-thook- **an- ith-** î-ir-i-e Maria
 F-1-friend 1-which SA₂-invite- AN- CRC- APL-PFV-IC-FV 1.Maria
 Cannot mean: For which friend did they coerce Maria to invite each other? (They didn't want the friend to be bored.)

The applied argument and the direct object cannot be co-indexed either, (33a). Note that (33) is grammatical on the reading where the external argument and the direct object are co-indexed, (33b).

- (33) I-nasi û-rîkû a-thamb- **an- ith-** î-ir-i-e tw-ana
 F-1-boss 1-which SA₁-wash- AN- CRC- APL-PFV-IC-FV 13-child
- a. * Which nurse did he coerce to wash the children for each other?
 b. ✓ For the benefit of which nurse did she coerce the children to wash each other?

AN1 therefore allows co-indexation of just one pair: external argument and direct object.

Consider next the patterns of co-indexations with AN2. Let us start with a sentence with just COERCE. Here two co-indexations are possible. The external argument and the direct object can be co-indexed, (34).

- (34) Mû-borisi n-a-thamb- **ith- an-** iir-i-e a-bungwa
 1-police F-SA₁-wash- CRC- AN- PFV-IC-FV 2-prisoner
 'The policeman coerced the prisoners to wash each other.'

The coercer and the external argument can also be co-indexed, (35a), but the coercer and the direct object cannot, (35b).

- (35) Borisi i-ba-thamb- **ith-** **an-** iir-i-e mû-bungwa
 2-police F-SA₁-wash- CRC- AN- PFV-IC-FV 1-prisoner

- a. ✓The policemen coerced each other to wash the the prisoner.
 b. *The policemen coerced the prisoner to wash each other.

Let us turn to the binding facts when there is AN₂, and when there are three non-subject arguments. Here binding is possible for all and only the following pairs: coercer and applied argument, applied argument and external argument, and external argument and direct object. No other co-indexations are possible. Let us demonstrate these patterns.

(36) shows co-indexation is allowed between the coercer and the applied argument.

- (36) I-mbi ba-thamb- **ith-** **an-** î-ir-i-e mû-bungwa
 F-what SA₂-wash- CRC- AN- APL-PFV-IC-FV 1-prisoner
 ‘What did they coerce the prisoner to wash for each other?’

Co-indexation is also possible between the applied argument and the external argument, (37).

- (37) I-mbi a-thamb- **ith-** **an-** î-ir-i-e a-bungwa
 F-what SA₁-wash- CRC- AN- APL-PFV-IC-FV 2-prisoner
 ‘What did he coerce the prisoners to wash for each other?’

The external argument and the direct object can also be co-indexed, (38), and that is it.

- (38) I-mw-ekûrû û-rîkû a-thamb- **ith-** **an-** î-ir-i-e tw-ana
 F-1-woman 1-which SA₁-wash- CRC- AN- APL-PFV-IC-FV 13-child
 ‘For which woman did he coerce the children to wash each other?’

The coercer and the external argument cannot be co-indexed, (39a). This is noteworthy since in the absence of the applied argument, this co-indexation is possible. It appears like the presence of the applied argument blocks co-indexation of the coercer and the external argument. Note that the sentence is grammatical on the reading where the coercer and the applied argument are co-indexed, (39b).

(39) I-mu-nene û-rîkû ba-thamb- **ith-** **an-** î-ir-i-e obisi
 F-1-boss 1-which SA₂-wash- CRC- AN- APL-PFV-IC-FV 9.office

- a. * For which boss did they coerce each other to wash the office?
 b. ✓ Which boss did they coerce to wash the office for each other?

The coercer and the direct object also cannot be co-indexed, (40).

(40) I-mu-coore û-rîkû ba-thook- **ith-** **an-** î-ir-i-e Maria
 F-1-friend 1-which SA₂-invite- CRC- AN- APL-PFV-IC-FV 1.Maria
 *‘For which friend did they coerce Maria to invite each other?’ (They didn’t want the friend to be bored.)

The applied argument and direct object cannot be co-indexed either, (41a). Note that this sentence is grammatical on the co-indexation of the external argument and direct object, (41b).

(41) I-nasi û-rîkû a-thamb- **ith-** **an-** î-ir-i-e tw-ana
 F-1-boss 1-which SA₁-wash- CRC- AN- APL-PFV-IC-FV 13-child

- a. * Which nurse did he coerce to wash the children for each other?
 (so that the children don’t mess the others)
 b. For which nurse did she coerce the children to wash each other?

To summarize, the binding patterns are such that only the following pairs can be co-indexed, (42).

- (42) a. coercer and applied argument
 b. applied argument and external argument
 c. external argument and direct object
 d. nothing else can be co-indexed

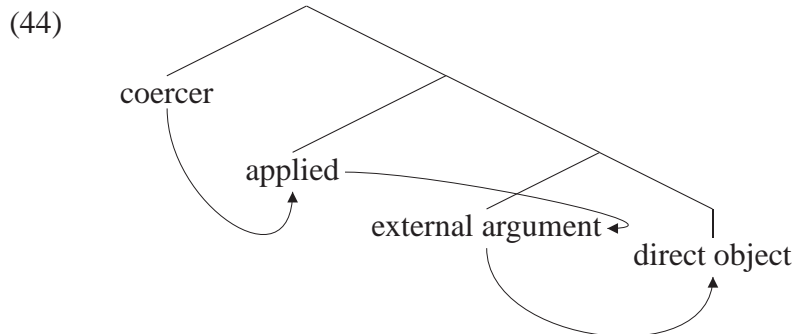
As one might see the pair restriction on binding has a relativized minimality flavour. So we can state our binding generalization as follows:

The binding generalization: Co-index the closest two arguments

If this is the right way to state the binding generalization, then the hierarchy of merge of arguments must be as in (43).

- (43) coercer > applied argument (benefactive) > external argument > direct object.

We illustrate this hierarchy in the tree in the (44), showing only the possible co-indexations.



Let us now derive the binding generalization for the applicative and the AN morphemes.

6.5 Deriving the binding generalization for APPL

Let us start with the APPL-D. Recall that APPL-D does not co-occur with *ith*, so we don't know where it starts. Furthermore the single APPLICATIVE is above *ith*, in the habitual-perfect zone. So how do we capture the fact that the APPLICATIVE scopes below *ith*, as suggested by the binding generalization, yet appears high in the clause?

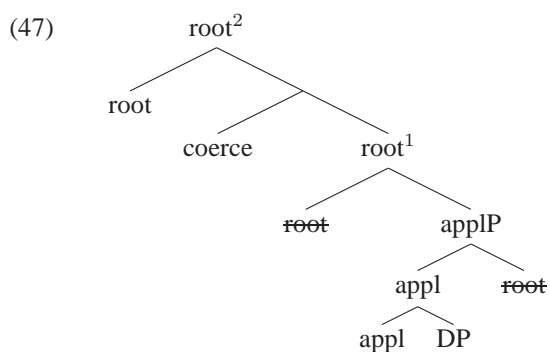
One way to capture the scope of the APPLICATIVE below *ith* is to say that the APPLICATIVE is generated below *ith*, but being related to an argument, it moves to a high position. This would explain why there is doubling - the double is a spell out of the trace of the moved APPLICATIVE. This would also explain why the APPLICATIVE is high, but scopes low. The APPLICATIVE starts its life low in the clause. If this way of viewing things is correct, then the APPL-D has to be base-generated below *ith*.

If the APPL-D is base-generated below *ith*, then we know what the syntactic derivation looks like: the surface order is also the scopal order so we have a cyclic derivation. This derivation is given in (45).

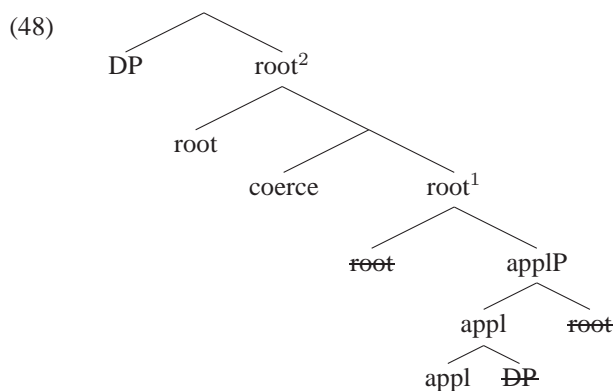
dragging system.

This is how we carry out the restrictive movement, and move the DPs and the applicative suffix given the base in (46):

In the first step of movement, the root cycles across *applP* and *COERCE*, (47).

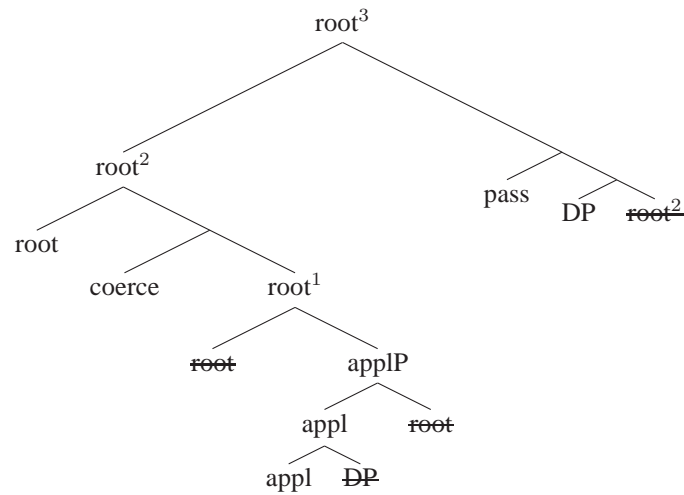


The DP complement of the applicative is evacuated and moved above *root*², (48).



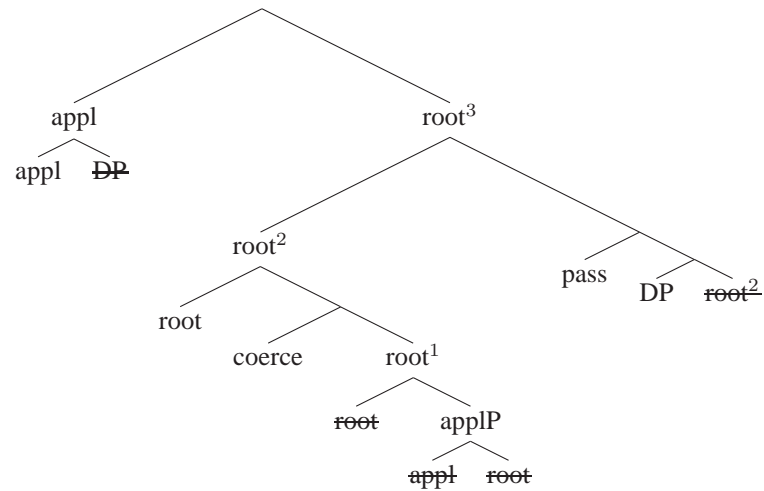
In the next step, *PASSIVE* is merged, and *root*² moves above *PASSIVE*.

(49)



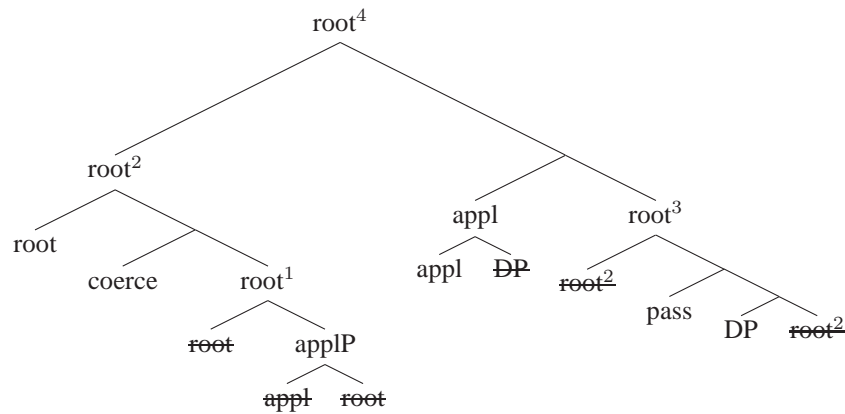
The phrasal remnant containing the APPLICATIVE is evacuated, and moved above root³, (50).

(50)



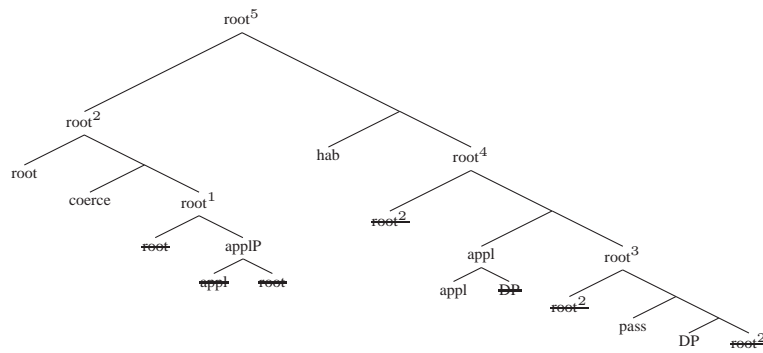
root² moves above the remnant containing the APPLICATIVE, (51).

(51)



Finally, the HABITUAL is merged and $root^2$ is moved above HABITUAL.

(52)



The last step of movement gives us the right surface order: root-COERCE-APL(double)-HABITUAL-APPLICATIVE-PASSIVE-DP.

We have derived therefore that the APPLICATIVE starts low, according to the binding generalization, and that the APPLICATIVE may appear high, in the habitual-perfect zone. It may appear high by NP-type movement, movement that occurs without the obligatory requirement of pied-piping by the root.

6.6 Deriving the binding generalization for AN

We have seen both from the ‘someone’ reading of AN, and the binding patterns that AN may have different theta roles. For example AN can be a benefactive, a causee (the one coerced), and whatever theta role an animate DP can get in object position. AN therefore cannot have a single position in the fseq. It is a complement of different things.

If AN merges as a complement of different things, then AN, has to move. Take for example AN2 when it has the low reading - the direct object reading. It has to start its life in the very position of AN1 - AN2 therefore has to move.

But where does AN2 move to?

The landing site of AN2 is hard to determine. This is because binding of AN is sensitive to the base position, not to the surface position. Consider for instance when AN2 has a low reading. AN here has started its life in the object position. But although AN has moved, it cannot feed binding - AN2 (when an object) cannot be co-indexed with the applied argument or the coerced. This would be expected to be possible if movement of AN feeds binding.

There is another source of evidence that binding of AN is sensitive to base positions of arguments: A raised object cannot bind AN that is on the matrix verb:

- (53) *I-ba-on-an-ir-e ba-gî-kum-j-w-a
 F-SA₂-see-PFV-FV SA₂-tns-praise-IC-PAS-FV
 cannot mean: they saw each other being praised, e.g. on TV.

So AN moves, but this movement does not create new interpretational possibilities. How do we know the landing position of AN2, given that its derived position does not result in new binding possibilities?

Consider now this fact: the position where AN2 lands can be reached by evacuating the APPLICATIVE. The landing site of AN therefore minimally must be above the base position of the APPLICATIVE.

To show the available possibilities for the movement of AN2, let us consider a scenario with four suffixes whose hierarchy is as in (54).

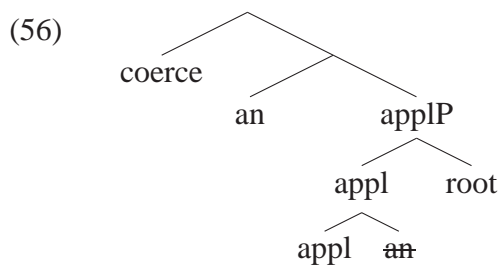
- (54) ABLE > ERRATIC > COERCE > APPL-D

Given this hierarchy, we want a derivation that will enable us to have APPL immediately following COERCE and AN2 immediately following APPL-D. We know this is the order because even though APPL-D, and COERCE do not co-occur, there is a sharp contrast between the structure where APPL-D follows AN2, (55a), and the structure where APPL-D immediately follows COERCE, (55b). APPL-D therefore prefers to immediately follow COERCE.

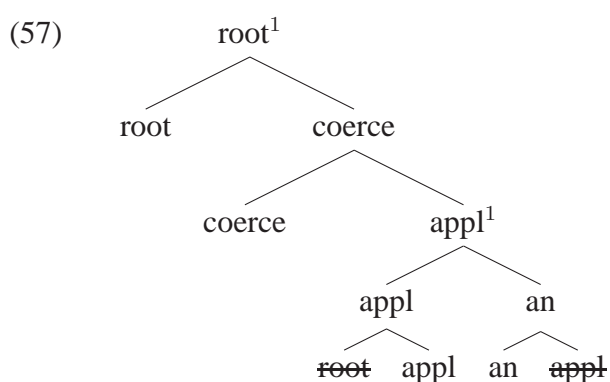
- (55) a. **COERCE-AN2-APPL-D
 b. *?COERCE-APPL-D-AN

ABLE and ERRATIC follow AN2: root-COERCE-APPLD-AN2-ABLE-ERRATIC. Let us now explore the derivations that will give us the right surface string.

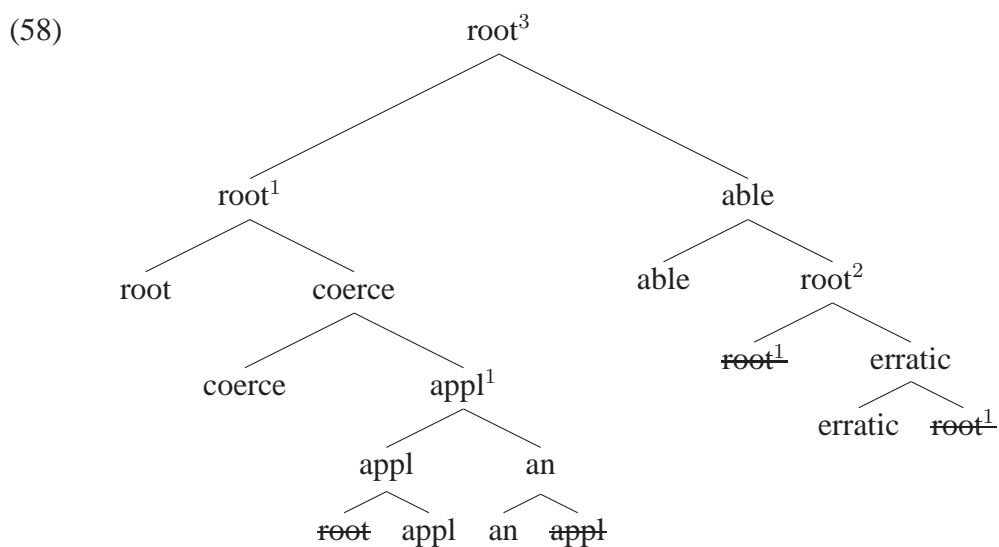
One, AN2 can move below COERCE, (56).



This is how we get the correct surface string. The root pied-pipes ApplP to a position between COERCE and AN, then the root strands applP, and moves above COERCE, (57).



Finally the whole of root¹ above cycles across ERRATIC and ABLE as shown in (58).

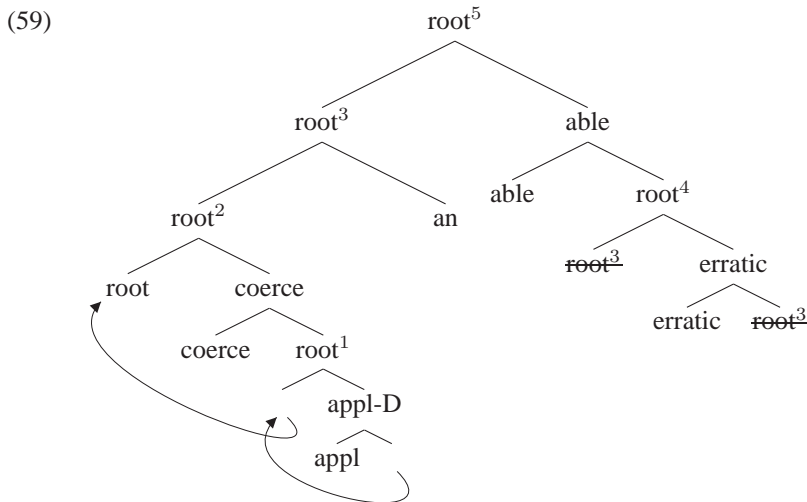


This gives us the right surface form: root-COERCE-APPL-D-AN-ABLE-ERRATIC.

There are two other derivations that will give the right surface form. One, AN2 could land immediately above *ith*. We would then get the right surface order in the following steps:

- The root cycle across APPL-D and COERCE
- root+COERCE+APPL-D moves around AN
- root+COERCE+APPL-D+AN cycles across ERRATIC and ABLE, giving the right surface form: root-COERCE-APPL-D-AN-ABLE-ERRATIC.

This derivation is schematized in (59).

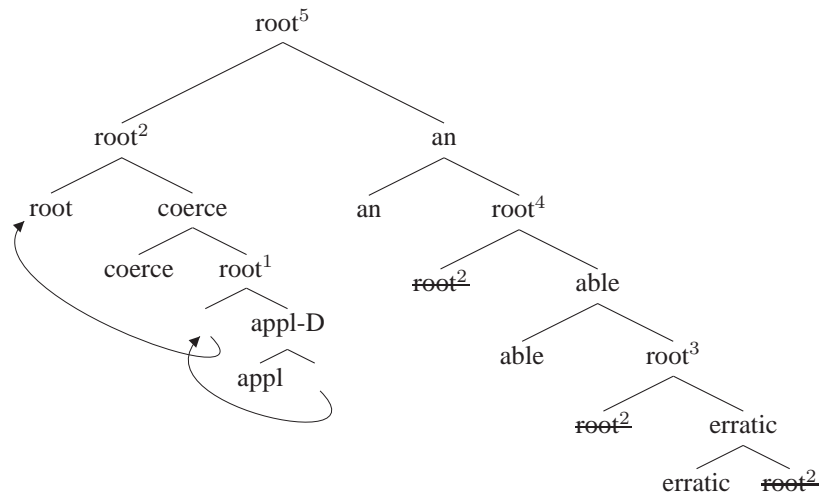


The other derivation would involve AN moving above ABLE. The surface order would then derive as follows:

- The root cycle across APPL-D and COERCE
- root+COERCE+APPL-D cycles across ERRATIC, ABLE, and AN: giving the right surface form: root-COERCE-APPL-D-AN-ABLE-ERRATIC.

We give this derivation in (60).

(60)



Given that the three derivations produce the desired result, how do we choose among these derivations? There is an aesthetic reason for preferring the derivation having AN2 above ABLE: we get the two morphemes that trigger applicative doubling (ABLE and AN2) in the same zone. We will however leave it open where AN moves to, since there is no conclusive evidence.

This concludes our account of binding generalizations for both the APPLICATIVE and AN2.

6.7 Resolving the *i*-causative paradox in Bantu

The *i*-causative (which we also refer to as the INNER CAUSATIVE) presents a paradox in Bantu: it behaves low, but at the same time appears high in the clause. How do we capture this fact? First let us establish the facts.

The *i*-causative portrays a clustering of properties which show it is low in the clause. First the *i*-causative forms idiomatic meanings with the root, to a degree not possible for example with the other causative morpheme, *ith*, the coerce causative. We list the idiomatic examples with *i* (which sometimes palatalizes to *j*) below. The [a] example gives the base verb. Where a compositional form is available, this form is given before the idiomatic form is presented.

- (61)
- a. ûka ‘Y wakes up’
 - b. ûk-j-a ‘X wakes Y up’
 - c. uk-j-a ‘Y gets an erection’

- (62) a. raara ‘spend the night somewhere’
 b. raar-**j**-a ‘X makes Y spend the night somewhere’
 c. raar-**j**-a ‘keep watch at night’
- (63) a. kîra ‘X goes over Y, e.g a fence’
 b. kîr-**j**-a ‘X assists Y go over a fence’
 c. kîr-**j**-a ‘X takes a woman secretly for marriage’
- (64) a. itha ‘hide’
 b. ith-**j**-a ‘keep livestock with a friend’
- (65) a. tema ‘X cuts Y’
 b. tem-**j**-a ‘X derides Y’
- (66) a. rîma ‘X cultivates Y, a garden’
 b. rîm-**j**-a ‘X works in order to get a pay’

In contrast to the many idioms above with *i*, there is only one idiomatic form with COERCE, (67b).

- (67) a. thoma ‘X reads Y’
 b. thom-**ith**-j-a ‘X teaches Y’ *‘X coerces Y to read’.

For the root and the INNER CAUSATIVE to be idiomatic, they must be a constituent at the exclusion of other suffixes. For this to be possible, the INNER CAUSATIVE has to merge very low in the clause in fact lower than COERCE. Hence *i* must merge low in the clausal hierarchy.

The low status of *i* can also be seen from the fact that it interacts with the reversive in a very tight manner. Sometimes the reversive and transitive can be bundled in the same morpheme, as seen in the majority of verbs, that form the reversive transitive with just *ûr*, not a combination of *ûk*, the reversive, and the INNER CAUSATIVE (*i*). We repeat an example with verbs with the *am* plug suffix, to demonstrate this pattern: these verbs form the reversive transitive with *ûr*.

- (68) a. ku-**am**-a
 b. ku-am-**ûr**-a
 c. *ku-am-**ûk-i**-a

When bundling of transitive and reversive is impossible, we get a combination of reversive (*ûk*), and transitive (*i*). We saw in chapter 5 that this was the case

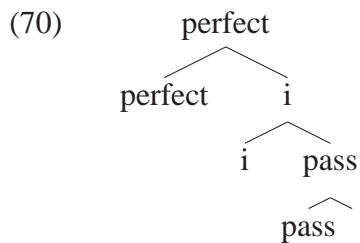
for verbs with the *ar* plug, (69).

- (69) a. nyony-**ar**-a ‘Y creases’
 b. ngony-**ar-ûk-i**-a ‘X uncreases Y’
 c. *noony-**ar-ûr**-a

We can summarize these two facts as follows: *ûr*, and *ûk+i*, are in complementary distribution. Complementarity in distribution in syntax is usually taken to be due to competition for insertion in the same syntactic positions. Since we know from scope the competitor of *ûk+i*, that is *ûr*, scopes below COERCE, then *ûk+i* must be below COERCE. Hence *i* must be below COERCE.²

The third evidence for the low status of *i* is scopal. Since COERCE, whenever it embeds a transitive sentence coerces a transitive event, it must be that transitive is added before coercion. Hence *i* which introduces transitivity has to be added before COERCE is introduced.

Despite these low properties, *i* occurs in a very high position in the hierarchy of the clause, a position between the perfect and the eventive passive, (70). (cf. see chapter 2)

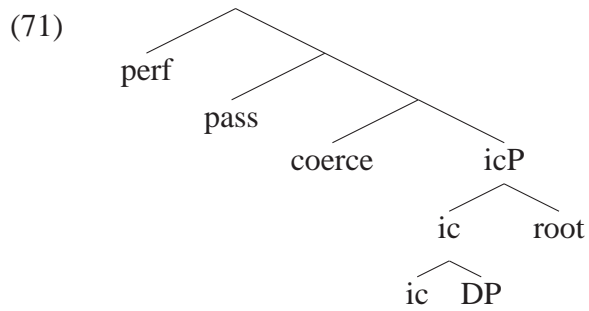


How do we harmonize the low scope, as well as the high occurrence of *i*?

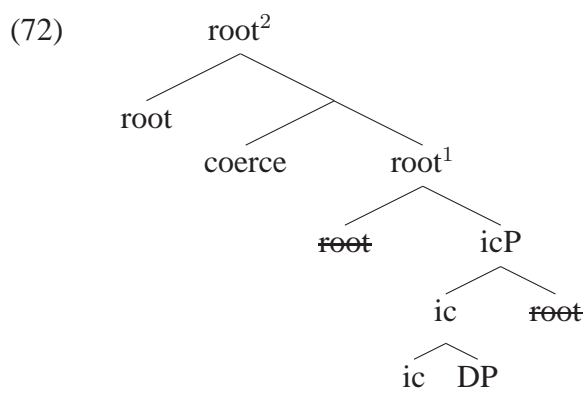
The treatment of the applicative presents a simple solution, but unfortunately one that is not within the dragging movement machinery we have been pursuing. *i* is moved as a phrasal remnant after the argument it introduces as a complement has been evacuated. We have again another instance of argument movement within the restrictive dragging movement theory.

To illustrate a derivation with *i*, let us consider a context with three other morphemes COERCE, PERFECT and PASSIVE. The hierarchy of merge of the four morphemes will be as in (71).

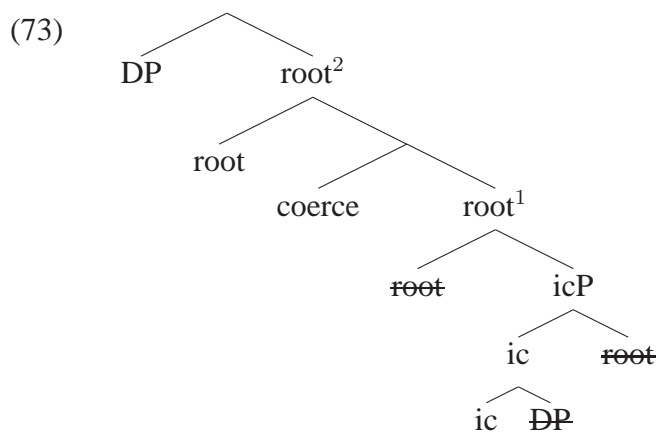
²There is a complication here in that the INNER CAUSATIVE can co-occur with *ûr* when COERCE embeds *ûr*. One way to capture the co-occurrence of the two morphemes which are supposed to be in complementary distribution is to say that the two morphemes can be syntactic copies of each other (see also chapter 2).



In the first step, the root cycles past *icP* and *COERCE*, as shown in (72).

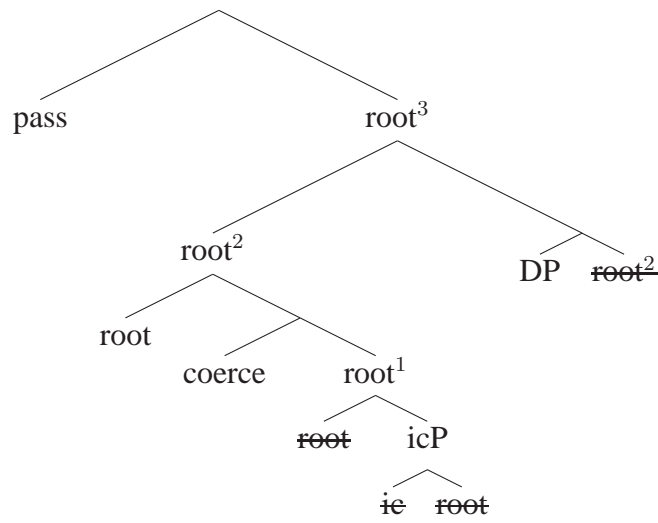


The DP complement of the *i*-causative is evacuated to a position above *root*², (73).



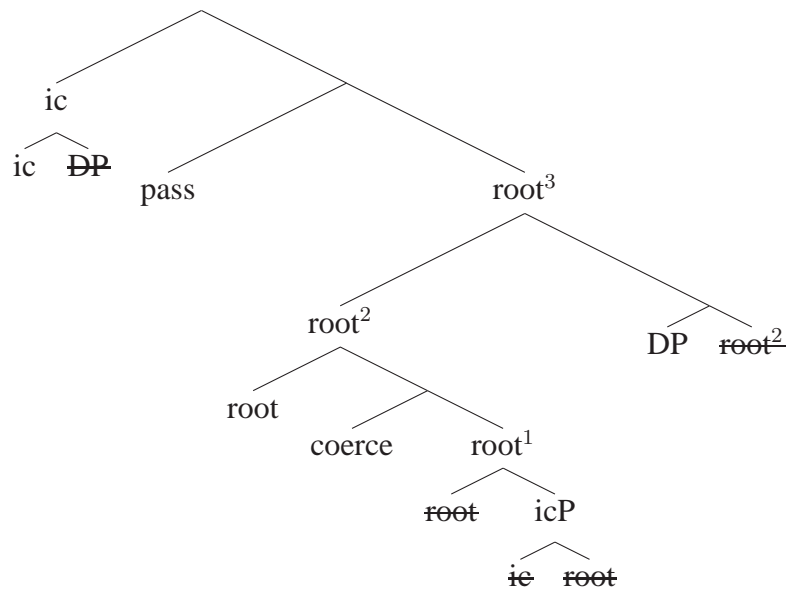
The passive is merged, (74).

(74)

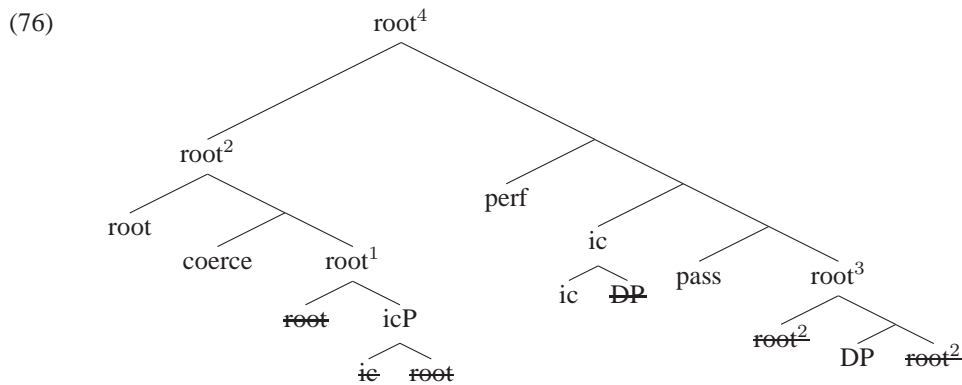


The phrasal remnant containing the INNER CAUSATIVE is moved above PASSIVE, (75).

(75)



Finally, the PERFECT is merged, and root² is moved above PERFECT, (76). (We ignore the intermediate steps of movement of root² in (76).)



This last stage of the derivation gives us the right surface string: root-COERCE-PERFECT-INNER CAUSATIVE-PASSIVE-DP.

The fact that *i* causative can be moved alone independent of the root might also explain phonological effects by the *i* causative on several parts of the syntactic template. To illustrate this effect, consider the following example from Jita, due to ((Downing 2005:pg. 130), Downing p.c). We have the root *gur* ‘buy’, the applicative morpheme *ir*, and the reciprocal morpheme *an*. When the *i* causative is added, we see its effects in three positions: it triggers spirantization of the *r* final consonant of the root to *-s*, spirantization of the consonant *r* of the applicative to *-s*, and the causative itself (*y*) occurs after *an*.

- (77) a. *gur-ir-an-a*
 b. *gus-is-an-y-a*

We can account for this pattern by claiming that the remnant containing the INNER CAUSATIVE can be moved to several places in the syntactic template. While in these positions *i* will trigger spirantization of the respective consonants under some locality after spell out.

6.8 Weakening dragging theory

We have accounted for the double properties of AN, APPLICATIVE and *i*-causative - scoping low, yet appearing high in the clause by demonstrating that (i) AN is an argument, and like arguments, undergoes movement independent of the root, (ii) APPLICATIVE and INNER CAUSATIVE move as phrasal remnants, after the DPs they introduce as complements are evacuated. This chapter therefore hints to the idea that (some of the) morphemes that are arguments, or argument introducing are without the domain of the dragging movement technology. We therefore have to weaken our theory in order to be able to linearize these argument and argument introducing morphemes.

Appendix A

Multi-verbs: challenges & speculations

In this appendix we present the analytical challenges presented by four restructuring verbs *îgua* ‘be’, *ambîria*, ‘begin’, *riganîria* ‘forget’, and *thira* ‘finish’. We start with the challenges presented by the internal make-up of (some of) these verbs themselves, then we move on to the problems created by these verbs for the lower part of the fseq, and climb up the fseq presenting the other challenges. After presenting the problems, we speculate on how one could go about solving these problems. We should acknowledge here that the results of this appendix are very tentative and require further investigation.

A.1 The light verbs are complex

The light verbs themselves are complex. Consider first ‘begin’. ‘begin’ has an APPLICATIVE and INNER CAUSATIVE, (1).

- (1) amb- $\boxed{\hat{r}}$ - \boxed{i} - a
begin- APL- IC- FV
‘begin’

‘forget’ is also complex. It has the AN morpheme that we saw denotes a reciprocal and someone (chapter 6), it also has an APPLICATIVE, and INNER CAUSATIVE, (2).

- (2) rig- \boxed{an} - $\boxed{\hat{r}}$ - \boxed{i} - a
‘forget- AN- APL- IC- FV
‘forget’

‘BE’ has an *u* suffix, (3). This suffix can be severed from the root by the HABITUAL (see below).

- (3) $\hat{\text{ig-}} \boxed{\text{u}}$ - a
 be- VR- fV
 ‘be’

The suffixes in boxes above are obligatory on the relevant verb. It is not clear what semantics, if any, these morphemes convey when they suffix on these verbs.

One could easily dismiss these morphemes as frozen, and therefore invisible to syntactic process. This cannot be the case though. Although these suffixes appear frozen, they have the regular syntax. For example when the ERRATIC morpheme is added to ‘begin’ and ‘forget’, it severs the APPLICATIVE and the INNER CAUSATIVE from the root, (4). The ERRATIC therefore appears in the position preceding the INNER CAUSATIVE and the APPLICATIVE, the usual position in the sequence of suffixes.

- (4) a. amb- **ang-** $\boxed{\hat{\text{ir}}}$ - $\boxed{\text{i}}$ -a
 begin- ERR- APL- IC- FV
 ‘begin quickly’
- b. rig-an- **ang-** $\boxed{\hat{\text{ir}}}$ - $\boxed{\text{i}}$ - a
 ‘forget-AN- ERR- APL- IC- FV
 ‘forget quickly’

We can show the *u* on BE is not part of the root. *u* and the root can be split by the HABITUAL, (5).

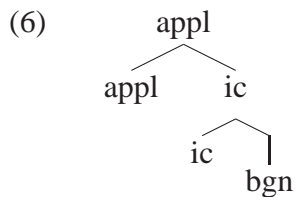
- (5) $\hat{\text{ig-}} \mathbf{ag-} \boxed{\text{u}}$ - a
 be- HAB- VR- fV
 ‘be usually’

These verbs therefore have a complex structure. But what does this structure look like?

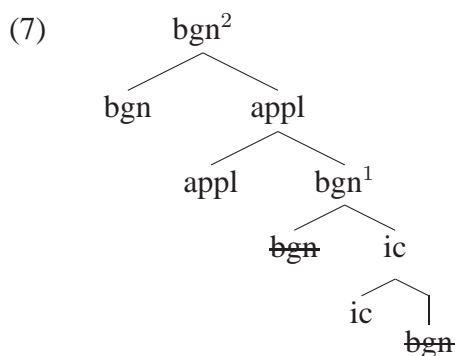
Consider first ‘begin’, which has the APPLICATIVE and the INNER CAUSATIVE. We have seen in chapter 2 and chapter 6 that the APPLICATIVE merges higher than INNER CAUSATIVE in the hierarchy of the clause. In chapter 6 for exam-

ple we have seen that the APPLICATIVE must merge above the INNER CAUSATIVE if we are to capture the binding generalization. The major motivation for this hierarchy of merge is the following: in the absence of an applied argument, the coercer (the highest argument) and the external argument can be co-indexed. When there is an applied argument and the external argument at the same time however, the coercer and the external argument cannot be co-indexed anymore. The reason for lack of co-indexation between the coercer and the external argument in the presence of the applied argument is that the applied argument is closer to the coercer than the external argument. Since the applied argument is introduced by the APPLICATIVE, and the external argument can be introduced by the INNER CAUSATIVE, then the applied argument introducer must also be closer to the coercer than the external argument introducer. Hence the APPLICATIVE is higher than the INNER CAUSATIVE in the clausal hierarchy.

Since we already know the hierarchy of the APPLICATIVE and the INNER CAUSATIVE from binding, we will assume this hierarchy here. The hierarchy of suffixes on ‘begin’ therefore is as shown in (6).



Since we know the hierarchy of the suffixes (6), and we know the surface order, then we also know how ‘begin’ attaches to its suffixes: ‘begin’ cycles across INNER CAUSATIVE and the APPLICATIVE.

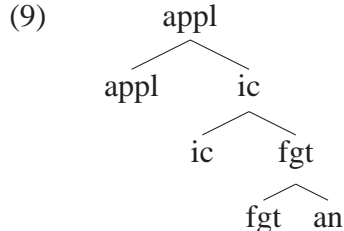


Consider next ‘forget’. This verb has three morphemes: an APPLICATIVE, INNER CAUSATIVE, and AN. We already know the hierarchy of merge of the AP-

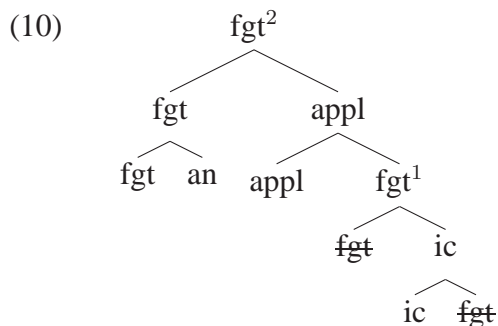
PLICATIVE and the INNER CAUSATIVE from the binding generalization: APPLICATIVE OVER INNER CAUSATIVE. How about AN? We saw in the previous chapter that AN is merged as a complement of different things, e.g. the APPLICATIVE and the INNER CAUSATIVE. Thus, there are two morphemes here that AN could be a complement of. It could be a complement of the APPLICATIVE or the INNER CAUSATIVE. In fact AN could also be the complement of the root. It is not easy to tell from the semantics what AN is a complement of. But at least we know from the syntax that we are dealing with the AN that appears closer to the root and that in transparent contexts has an object reading. Thus although ‘forget’ cannot be causativised with COERCE, the structure with AN preceding COERCE is understandable, (8), but the one with AN following COERCE is plain uninterpretable, (8b).

- (8) a. *rig- an- ith
forget- AN- COERCE
- b. **rig- ith- an
forget- COERCE- AN

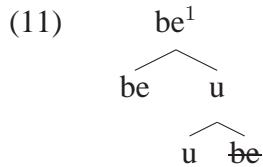
We will take the contrast in (8) to be evidence that we are dealing with AN that is an object and which therefore merges as a complement of the root. The hierarchy of merge of the suffixes on ‘forget’ therefore is as in (9).



To get the surface order, forget+an would move cyclically across the INNER CAUSATIVE and the APPLICATIVE, as shown in (10).



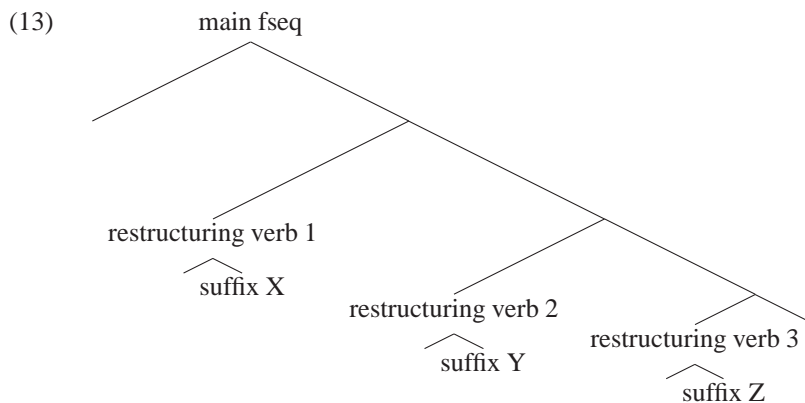
Finally for BE, which comes with some vowel *u*, the syntax would be as in (11). *u* merges above BE, and BE moves above *u* preceding *u* in the surface string.



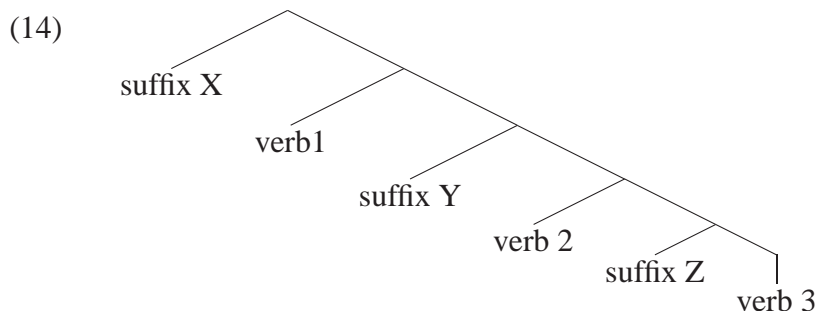
Let us turn to a different issue: the merge of several restructuring verbs. Recall from chapter 2 that the restructuring verbs other than BE come in a rigid order, (12).

(12) BEGIN < FORGET < FINISH < MAIN VERB

How does one combine the restructuring verbs in a rigid order in fseq, and at the same time ensure that they have their relevant suffixes? There are at least two ways one could do this. One is to have each restructuring verb combine with its suffixes in a separate work space (i.e. fseq), and afterwards, the fully-formed restructuring verb is glued into the main functional sequence. We schematize this abstractly in (13).



The other alternative is that all the suffixes found on the restructuring verb are merged on the main projection line, (14), and the relevant verbs move to attach to these suffixes. Assume in the tree below that *Z* will end up as a suffix on verb 3, *Y* on verb 2, and *X* on verb 1.

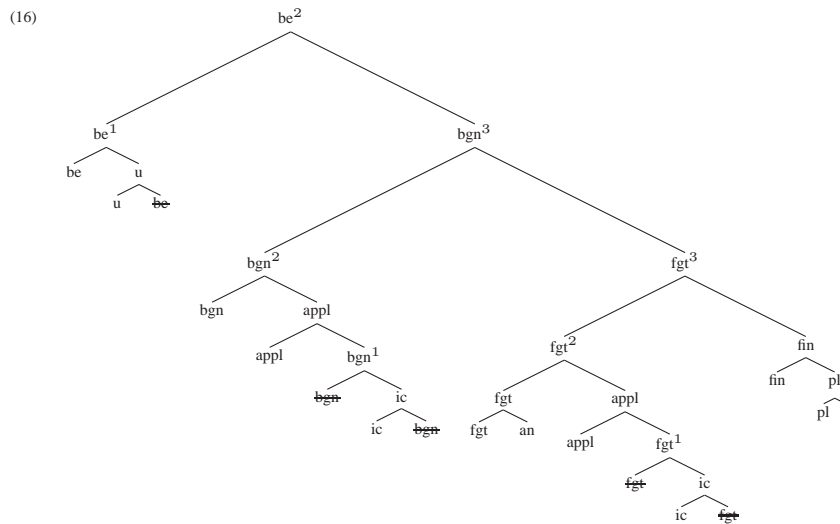


Which of the two options is the best one? We will go for the first alternative since it is more consistent with the theory we have pursued in this thesis, the dragging movement theory where movements are restricted. If we went for the second alternative, we would require a series of very complex movements, some of them completely unrestricted, and unmotivated. The unrestricted movements would come about because verbs do not attach to their suffixes by head movement, but by phrasal movement (cf. chapter 1). For V2 to attach to Y in (14) for example, we will require to evacuate the constituent containing V3 and its suffix, Z. We do not need this movement on the first alternative.

Let us now illustrate how the structure with four restructuring verbs ‘BE’, ‘begin’, ‘forget’, ‘finish’, and the main verb, ‘play’ would look like. Recall that the hierarchy of merge of these verbs is as (15). (Let us assume that BE merges above ‘begin’. We suggest this might be case below.)

(15) BE > BEGIN > FORGET > FINISH > PLAY

‘play’ and ‘finish’ do not have suffixes they are idiomatic with, so we will just insert them as simplex. The five verbs are pre-assembled in their own fseq (a separate fseq for each verb), and then grafted onto the main fseq in separate left branches as schematized in (16). We assume that these verbs merge in the main fseq in a left to right scopal order: BE over ‘begin’ over ‘forget’ over ‘finish’ over ‘play’.



A.2 Complications with perfect and habitual

We saw in the appendix to chapter 2 that when there is a sequence of several restructuring verbs, the *HABITUAL* attaches to the first verb in the sequence, and *PERFECT* attaches to the second verb excluding BE (first and second verb here should be understood as first and second given the available restructuring verbs in the sentence). There are at least two issues we need to address here: (i) What mechanisms ensure that *HABITUAL* attaches to the first verb and *PERFECT* to the second? (ii) Why is it generally *PERFECT* cannot occur on BE? First let us get the facts.

Let us summarize these patterns in the table below. The table shows the *HABITUAL* attaching to the first verb, and the *PERFECT* to the second verb. Read the table as follows: *HABITUAL*, and *PERFECT* are suffixes to the verb on their immediate right. In the first row for example, *HABITUAL* is a suffix on BE, and the *PERFECT* a suffix on ‘begin’. In the second row, the *HABITUAL* is a suffix on ‘begin’, and *PERFECT* a suffix on ‘forget’.

hab	be	perf	bgn		fgt		fin		pl-pass
hab			bgn	be	perf	fgt		fin	pl-pass
hab			bgn			be	perf	fin	pl-pass
hab			bgn					be	perf pl-pass
hab					fgt	be	perf	fin	pl-pass
hab					fgt			be	perf pl-pass
hab							fin	be	perf pl-pass
hab								be	perf pl-pass

Let us provide two pieces of data here to illustrate some of the patterns above. (17) is a sentence with the five verbs. HABITUAL attaches to BE, and PERFECT to ‘begin’. This is the first row in the table above.

- (17) Piano n-î-îg- **ag**-u-a j-amb-îr- **îit**-i-e kû-riganî-îr-i-a
 9.piano F-SA₉-be-HAB- VR-FV SA₉-begin-APL-PFC- IC-FV 15-forget-APL-IC-FV
 kûthir-a gû-ceth-w-a
 15-finish-FV 15-play-PAS-FV
 ‘Someone usually has begun to forget to finish to play the piano.’

In (18), HABITUAL attaches to ‘begin’, and PERFECT attaches to ‘forget’. This is the second row in the table.

- (18) Piano n-î-amb- **ag**-îr-i-a kû-îg-u-a î-rig-anî-îr-
 9.piano F-SA₉-begin- HAB- APL-IC-FV 15-be-VR-FV SA₉-forget-AN-APL-
îit-i-e kûthir-a gû-ceth-w-a
 PFC- IC-FV 15-finish-FV 15-play-PAS-FV
 ‘Someone usually has begun to forget to finish to play the piano.’

The cases shown in the table below are ungrammatical because the PERFECT does not attach to the second verb. In the first row, the PERFECT attaches to the third verb, ‘finish’. In the second row, the PERFECT attaches to the fourth verb (the main verb). The PERFECT therefore must attach to the second verb

that is available in a sequence of restructuring verbs, a second verb other than BE.

*hab	bgn	fgt	be	perf	fin		pl-pass
*hab	bgn	fgt			fin	be	perf pl-pass
*hab	bgn				fin	be	perf pl-pass
*hab		fgt			fin	be	perf pl-pass

We illustrate the ungrammatical cases in the table above with one example, where PERFECT attaches to ‘finish’ across ‘forget’ - this example is ungrammatical because PERFECT must attach to the second verb that is available, (19).

- (19) *Piano n-î-amb- **ag**- îr-i-a kû-rig-anî-îr-i-a kû-îg-u-a
 9.piano F-SA₉-begin-HAB- APL-IC-FV 15-forget-AN-APL-IC-FV 15-be-VR-FV
 î-thir- **îtt**- e gû-ceth-w-a
 SA₉-finish- PFC- FV 15-play-PAS-FV

The cases where HABITUAL would attach to a verb lower than the verb attaching to PERFECT, are also ungrammatical. Thus in (20) where the HABITUAL which precedes the PERFECT attaches to ‘forget’ and the PERFECT to ‘begin’, the sentence is ungrammatical.

- (20) *Piano n-î-rig-an- **ag**- îr-i-a kû-îg-u-a j-amb-î-îr-
 9.piano F-SA₉-forget-AN- HAB- APL-IC-FV 15-be-VR-FV SA₉-begin-APL-
îtt- i-e gû-ceth-w-a
 PFC- IC-FV 15-play-PAS-FV

The sentence is ungrammatical because the hierarchy of the verbs must be maintained: ‘begin’ over ‘forget’.

Finally PERFECT cannot occur on a higher verb, and HABITUAL on a lower verb. Thus PERFECT cannot occur on ‘begin’, and HABITUAL on ‘forget’, (21). The hierarchy of HABITUAL and PERFECT must also be respected: HABITUAL over PERFECT.

- (21) *Piano n-î-amb- îr- îr- i-e kû-rig-an- ag- îr-i-a
 9.piano F-SA₉-begin- APL- PFC- IC-FV 15-forget-AN- HAB- APL-IC-FV
 gû-ceth-w-a
 15-play-PAS-FV

The data above present two challenges: first we have a double Bobaljik kind of paradox (Bobaljik (1999), Svenonius (2002)): the restructuring verbs (putting aside BE for a moment) and the main verb are rigidly ordered, (22a), and the HABITUAL and PERFECT are also rigidly ordered, (22b).

- (22) a. BEGIN > FORGET > FINISH > PLAY
 b. HABITUAL > PERFECT

Given the rigidity in the ordering of the verbs, and the aspectual markers, it is not clear how to get the interleaving of the verbs and the suffixes.

The other paradox regards the ordering of the suffixes themselves. Both ‘begin’ and ‘forget’ require obligatorily the INNER CAUSATIVE and the APPLICATIVE. These suffixes are rigidly ordered on both ‘begin’ and ‘forget’, (23).

- (23) APPLICATIVE > INNER CAUSATIVE.

We see this rigidity in the ordering of the APPLICATIVE and the INNER CAUSATIVE in (24).

- (24) Piano n-î-amb-ag- îr- i- a kû-îg-u-a î-rig-an- îr-
 9.piano F-SA₉-begin-HAB- APL- IC- FV 15-be-VR-FV SA₉-forget-AN- APL-
 îr- i-e kûthir-a gû-ceth-w-a
 PFC- IC- FV 15-finish-FV 15-play-PAS-FV
 ‘Someone usually has begun to forget to finish to play the piano.’

There is also a structural problem: HABITUAL and PERFECT do not occur as the last suffixes on the restructuring verbs. Rather they get infixated between morphemes that the restructuring verbs require obligatorily. In (24), HABITUAL is infixated between the root ‘begin’ and the APPLICATIVE, yet ‘begin’ obligatorily requires the APPLICATIVE. We schematize this pattern of infixation in (25).

- (25) begin-HABITUAL-APPLICATIVE

Thus even when the HABITUAL occurs on a restructuring verb, it occupies the usual position in the sequence of suffixes - a position immediately preceding the non-doubling applicative. We need to capture the parallelism between the position of the HABITUAL (in fact also the PERFECT) in restructuring con-

texts, and single verbs.

We also see the infixing of the PERFECT in (24). The PERFECT is infixes between the forget+an+APPLICATIVE and the INNER CAUSATIVE, yet APPLICATIVE and INNER CAUSATIVE are suffixes that ‘forget’ cannot occur without: it requires them obligatorily. We schematize the infixation in (26).

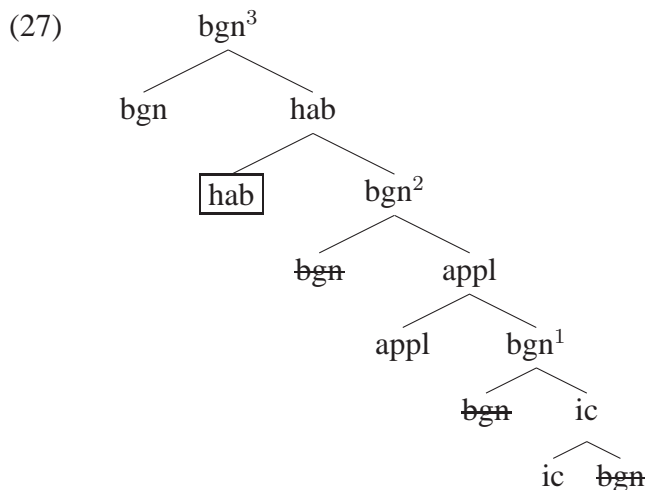
(26) forget-AN-APPLICATIVE-PERFECT-INNER CAUSATIVE

How do we account for the Bobaljik paradox, and the infixing problem?

Here is a tentative solution. We could assume that the restructuring verbs are base-generated in their own fseq, and then are grafted into the main fseq. Furthermore, we could assume that the HABITUAL and the PERFECT (and in fact all the affixes that occur on the restructuring verbs) are also generated in the fseqs of the (restructuring) verbs, and then these verbs move to license projections with PERFECT and the HABITUAL in the main fseq.

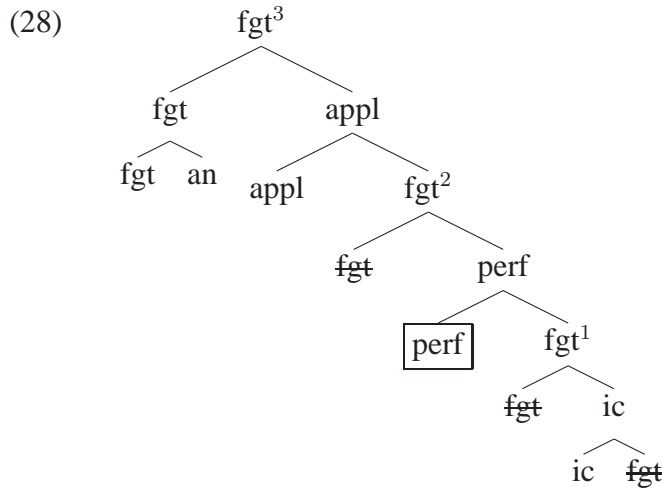
This approach if right, already gives us one nice result: since the suffixes are generated in the fseq of the restructuring verbs, they will also be rigidly ordered. Suffixes in an fseq are rigidly ordered. Hence when APPLICATIVE and the INNER CAUSATIVE merge on ‘begin’ and ‘forget’, they will appear in the rigid order. This might account for the paradox created by the suffixes that appear on both ‘begin’ and ‘forget’ obligatorily.

Let us demonstrate in steps how such an account would be implemented for the HABITUAL and the PERFECT suffixes. Consider first the structures in (27). The HABITUAL is generated in the fseq of ‘begin’. The HABITUAL is generated above APPLICATIVE as it does on single verbs (chapter 2).

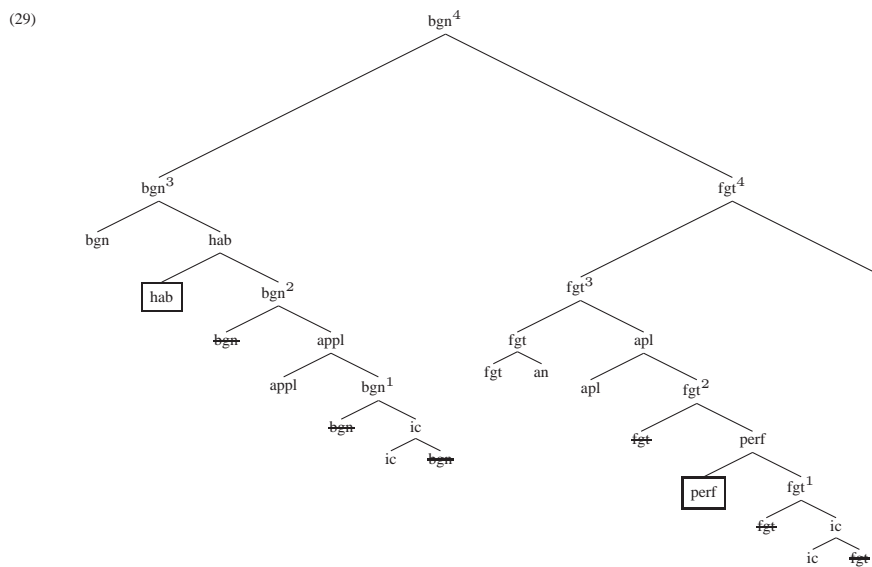


In the structure in (28), the PERFECT is base-generated in the fseq of ‘for-

get'. PERFECT is below APPLICATIVE, as in single verbs (chapter 2).

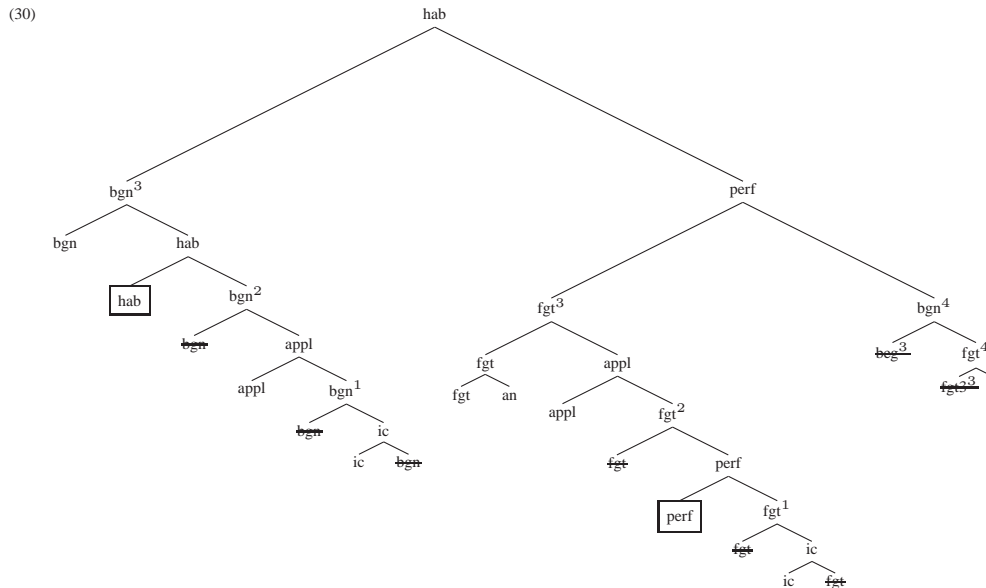


These two structures are then grafted onto the main fseq. ‘forget’ merges in a position with ‘forget’, to license whatever aspect/property ‘forget’ conveys in fseq, and ‘begin’ merges in a projection with ‘begin’, to license the inceptive aspect head. Assuming structures are built bottom up (Chomsky (1995)), we have to conclude that a verb that licenses a head lower in fseq merges or even moves before a head that licenses higher heads in fseq. We illustrate this stage of the derivation, where ‘forget’ and ‘begin’ are merged in the main fseq in (29), with ‘forget’ being attached before ‘begin’.



In the next stage of the derivation ‘forget’, which has PERFECT moves to

the projection with PERFECT to license the PERFECT aspect and ‘begin’, which has HABITUAL moves to a projection with HABITUAL to license HABITUAL aspect. We illustrate this in (30). (Note that the HABITUAL and PERFECT that will be pronounced are inside the fseq of the restructuring verbs in left branches.)



The general logic of this approach therefore is that whatever affixes that appear on the verbs in a restructuring context are generated in the fseqs of the various verbs. These verbs then merge and move to license (at least the non-obligatory affixes) in the main fseq. Let us call this approach *the matching approach* - suffixes on the restructuring verbs are matched with projections in the main fseq in order to license the projections in the main fseq.¹

Note that this account maintains the good aspect of our dragging movement theory: the suffixes, when they move move with the root.

Let us turn to another issue. How do we account for the ordering paradox presented by the HABITUAL and the PERFECT on the one hand, and the restructuring verbs on the other? How do we capture the fact that the verbs must be

¹For this account to succeed, we have to assume that the suffix on the restructuring verb that licenses the projection in the main fseq does not need to be the highest in the projection line of the restructuring verb. Thus in (30), although the HABITUAL and the PERFECT on ‘begin’ and ‘forget’ respectively are the licensors for HABITUAL and PERFECT in the main fseq, they are embedded in the left branches. Licensing will work therefore if it is sufficient that the verb that moves to the specifier of a projection to be licensed has the relevant suffix, however embedded. Alternatively, it could be that all the features of the suffixes on a verb, are visible at the highest node, via some projection mechanism. Then we would maintain that the licensor can abstractly be the highest item in the left branch. We will leave both options open for now.

rigidly ordered, and the fact that HABITUAL and PERFECT must also be rigidly ordered. Let us repeat the patterns we need to account for in the table below: HABITUAL attaches to the first verb, and PERFECT the second verb excluding BE.

hab	be	perf	bgn		fgt		fin		pl-pass
hab			bgn	be	perf	fgt		fin	pl-pass
hab			bgn			be	perf	fin	pl-pass
hab			bgn					be	perf pl-pass
hab					fgt	be	perf	fin	pl-pass
hab					fgt			be	perf pl-pass
hab							fin	be	perf pl-pass
hab								be	perf pl-pass

To capture the above patterns, we need to make the following assumptions:

1. The hierarchy of merge of the verbs and the suffixes is HABITUAL > BE > PERFECT > begin > forget > finish > play/main verb
2. PERFECT attracts one of the lowest verbs
3. BE optionally attracts one of the restructuring verbs
4. Attraction by BE and PERFECT must be order preserving
5. HABITUAL attracts the highest verb
6. Projections in the main fseq must be licensed by a relevant suffix or verb
7. Verbs are generated in multiple versions outside the main fseq: all the versions contain the obligatory suffixes, but these versions only optionally have HABITUAL and PERFECT and the other affixes. HABITUAL and PERFECT cannot be merged on the same verb.²

²Thus there could be three versions of ‘begin’ one with APPLICATIVE and INNER CAUSATIVE (the obligatory suffixes), one with obligatory suffixes plus PERFECT, and the other with obligatory suffixes plus HABITUAL. The same would hold for other verbs.

To illustrate how these assumptions will account for the facts, consider the first cell in the table above. *PERFECT* is a suffix on ‘begin’. This means that *PERFECT* is base-merged in the fseq of ‘begin’. ‘begin’ then merges in the main fseq in [Spec, begin], and then moves to [Spec, PERF] to license *PERFECT* aspect. The merge of the begin version with *PERFECT* will filter all other versions of ‘begin’ that are generated outside the main fseq because there is only a single position for inceptive aspect in fseq. The other versions of verb other than begin, generated with *PERFECT* will be ruled out by the fact there is only one position for *PERFECT* in fseq, and by order preserving movement: A verb lower than ‘begin’, even though generated with *PERFECT*, cannot move to a position with *PERFECT* in fseq, across ‘begin’ as this will reverse the order of ‘begin’ and that verb: attraction by *PERFECT* must be order preserving (assumption 4).

On the first row in the table, we also see that *HABITUAL* is a suffix on BE. This means that BE merges in the main fseq, in the specifier of a BE projection. Recall that by our assumptions BE merges higher than *PERFECT* (assumption 1). In this context, BE does not attract any verb, and therefore is attracted by the *HABITUAL* being the highest verb: *HABITUAL* attracts the highest verb (assumption 5). The fact that BE is attracted by the *HABITUAL* means that *HABITUAL* is originally merged in the fseq of BE. The attraction of the BE version with *HAB* filters the other versions of BE generated without *HABITUAL* since there is only one position for BE in fseq, therefore only one version of BE can be used. If BE is merged in the main fseq without *HABITUAL*, *HABITUAL* would still attract it, since *HABITUAL* attracts the highest verb. But then the projection with *HABITUAL* in fseq would not be licensed, and hence the sentence would be ruled out (assumption 6).

The pattern of suffixation on the last row in the table above, where *HABITUAL* attaches to BE, and *PERFECT* to the main verb can be accounted for in a similar fashion. *PERFECT* in the main functional sequence attracts the main verb, BE merges and is attracted by *HABITUAL*. The *PERFECT* is born in the fseq of the main verb, and *HABITUAL* in the fseq of BE.

Consider next the second roll in the table where *PERFECT* is a suffix on ‘forget’, and *HABITUAL* a suffix on ‘begin’. Here *PERFECT* attracts one low verb, ‘forget’ and BE attracts one of the low verbs ‘begin’. Since both BE and *PERFECT* are attracting, we get an order preserving movement: ‘begin’ must appear higher than ‘forget’. When ‘begin’ is attracted by BE, it becomes the highest verb, and thus is attracted by the *HABITUAL*. As before, we have to assume that the versions of verbs that are attracted are the ones that have the relevant suffixes and that conform to the condition that movement be order preserving.

The other patterns of suffixation on the 3rd to the 6th row that involve BE attracting one of the lowest verbs can be accounted for in a similar fashion. Note that the success of this account depends on suffixes and the verbs belonging to some relevant category, such that some categories attracts others, while others are attractees, and that the attraction is subject to some locality (see Abels (2008) for a similar treatment of cross serial dependencies.)

There are a few other issues we need to explain here. First what determines the optionality in the attraction of BE. Second, why do PERFECT and BE have to attract the verbs in an order preserving way?

We do not have an account for the difference between attracting and non-attracting BE.

The other issue why attraction by both the PERFECT, and BE have to be order preserving might follow from relativized minimality. Since both movements involve attraction of light verbs, then they are the same movement. To avoid a locality violation, the verbs are moved in order preserving way, so that at the end of the derivation, the hierarchy of the verbs is the same - whether there is a relativized minimality violation or not is computed at the output (Starke (2001)). Since at the output, the light verbs are ordered in the order they were in the base, we don't get a violation.

Let us move to another separate issue: Why is it PERFECT can never be a suffix on BE. Two reasons. PERFECT looks down and attracts a verb, but BE is merged above PERFECT. Attraction of BE by PERFECT would be a case of lowering movement of the affix hopping type (Chomsky (1957)), movements that are outside the dragging theory we entertained in this thesis where all movement is leftward to a c-commanding position. If BE attracted PERFECT, this would be a case of an affix moving independently of the verb, but this is not allowed at least for suffixes of the non-argument type (cf. chapter 6). We can actually derive the fact that BE only attracts verbs from this restriction on movement.

The matching approach sounds like a promising approach for accounting for the Bolbajik paradox and the structural problem of infixation. It has some problems however which we should mention.

First on this approach, we have to generate several versions of of the same verb. These verbs are then filtered by various conditions, e.g. order preserving movement, and that there is only one projection in fseq for each restructuring verb. It appears like the generation of several versions of the same verb which then have to be filtered complicates the system a lot.

Second, since the verbs are assembled outside the main fseq before the attraction by BE, PERFECT and HABITUAL which are on the main projection line there is no way to immediately force the relevant verbs to have the relevant

suffixes. We have to try merging in the main fseq as many versions of verbs as possible until we get a converging derivation. There will be many derivations therefore that will eventually be filtered out. This again sounds like a complication: there has to be many trials before one can land on the right derivation.

We will leave investigation of the consequences of *the matching approach* for restructuring verbs, and other contexts showing interleaving of fseqs for future research. We will however continue to use *the matching approach* to suggest tentative solutions to other problems raised by the suffixes and verbs in restructuring contexts, despite poorly understanding the range and gravity of its consequences.

A.3 Doubling prefixes

The prefixes present three challenges. First there are prefixes that must remain on the lowest verb. Second is a prefix that must occur on the highest verb, and third, there are prefixes that can double. How could we account for these facts? As usual, let us establish the facts first.

Let us start with the prefixes that must be low on V. These are the REFLEXIVE and the OBJECT MARKER. Thus although these prefixes precede the HABITUAL on a single verb, the order is reversed in the BE auxiliary construction. We illustrate this reversal of positioning for the REFLEXIVE and HABITUAL in (31) and the OBJECT MARKER and the HABITUAL in (32) in a sentence with just the BE auxiliary.

- (31) a. Maria n-a- **î-** kur- **ag-** a
₁.Maria F-SA₁- REFL- COMB- HAB- FV
 ‘Maria usually combs herself.’
- b. Maria n-a-**îg-** **ag-** u-a a- **î-** kur-**îît-e**
₁.Maria F-SA₁-be- HAB- VR-FV SA₁- REFL- comb-PFC-FV
 ‘Maria usually has combed herself.’
- (32) a. Maria n-a- **ba-** kur- **ag-** a
₁.Maria F-SA₁- OM₂- comb- HAB- FV
 ‘Maria usually combs them.’
- b. Maria n-a-**îg-** **ag-** u-a a- **ba-** kur-**îît-e**
₁.Maria F-SA₁-be- HAB- VR-FV SA₁- OM₂- comb-PFC-FV
 ‘Maria usually has combed them.’

In contrast to the OBJECT MARKER and the REFLEXIVE above, the FOCUS MARKER must always occur on the highest verb.

- (33) a. Maria n-a-îg-ag-u-a a-thom-eet-e
₁.Maria F-SA₁-be-HAB-VR-FV SA₁-read-PFC-FV
 ‘Maria usually has read.’
 b. *Maria a-îg-ag-u-a n- a-thom-eet-e
₁.Maria SA₁-be-HAB-VR-FV F- SA₁-read-PFC-FV

Let us turn to the prefixes that double. One of the prefixes that doubles is the infinitive marker *kû*. *kû* must occur on any verb in a sequence on restructuring verbs except (i) the highest verb or (ii) the verb immediately following BE. We illustrate this pattern in (34). (The *kû* on the last verb appear as *gû* because the following segment is voiceless. This is Dahl’s law at work in Kîtharaka (see wa Mberia (1981), wa Mberia (1993), for details.)

- (34) Piano n-î-îg-ag-u-a j-amb-îr-îît-i-e kû-riganî-îr-i-a
₉.piano F-SA₉-be- HAB-VR-FV SA₉-begin-APL-PFC-IC-FV ₁₅-forget-APL-IC-FV
kû-thir-a gû-ceth-w-a
₁₅-finish-FV ₁₅-play-PAS-FV
 ‘Someone usually has begun to forget to finish to play the piano.’

The other categories of prefixes that double are SUBJECT AGREEMENT, NEGATION and TENSE. These suffixes double on the highest verb, or on the verb immediately following BE. In other words, these suffixes are in complementary distribution with *kû*. Put in a more precise way, infinitive *ku*, and regular SUBJECT AGREEMENT are in complementary distribution. Since NEGATION, and TENSE when they occur on verbs, occur in only those that have SUBJECT AGREEMENT (for some unknown reason), they will also show complementarity with *kû*.

Since these suffixes double on the highest verb, and the complement of BE, we will simplify the constructions here and illustrate the patterns with contexts where BE is the highest verb, and the main verb its complement. We discuss these doublings below in some detail, since the doubling of some morphemes e.g. the tenses seems to occur in very specific environments.

Consider first SUBJECT AGREEMENT. SUBJECT AGREEMENT is obligatory on both BE and V.

- (35) Maria *(a)- îg-ag-u-a *(a)- thom-eet-e barûa
 1.Maria SA₁- be-HAB-VR-FV SA₁- proud-read-PFC-FV 10.letter
 ‘Maria usually has read mail.’

This means that agreement has two positions in an fseq.

Consider next NEGATION. We already saw in chapter 3 that for NEGATION and FOCUS MARKER to co-occur in a declarative sentence, the FOCUS MARKER must occur on AUX, and NEGATION on V, (36).

- (36) a. Maria **n-** a-îg-ag-u-a a- **ta-** thom-eet-e
 1.Maria F- SA₁-be-HAB-VR-FV SA₁- NEG- read-PFC-FV
 ‘Maria usually has not read.’
- b. *Maria a- **ti-** îg-ag-u-a **n-** a-thom-eet-e
 1.Maria SA₁- NEG- be-HAB-VR-FV F- SA₁-read-PFC-FV

This seems to suggest that NEGATION has an independent position lower in the clause. In fact this conjecture is corroborated by the fact that another NEGATION can occur upstairs on AUX, and here we get a double negation reading, (37).

- (37) Maria a- **ti-** îg-u-a a- **ta-** thom-eet-e
 1.Maria SA₁- NEG- be-VR-FV SA₁- NEG- read-PFC-FV
 ‘It is not the case that Maria will not have read.’

Negation therefore has two positions in fseq.

Note that if the complication with the prefixes was only due to agreement and negation (assuming that infinitive *kû* also falls under agreement), we could brush off the issue with some consolation - agreement and negation tends to appear in several places in an fseq even in other languages (Cinque (1999)). The issue is however a bit more complicated since the tenses also appear in AUX and V, although there are some intricate restrictions governing their distribution.

Kîtharaka has a complicated tense system, the tense system interacting with focus in ways poorly understood at the moment. Let us start with the *kû* tense prefix.

This *kû* differs from infinitive *kû* in that it can co-occur with subject agreement. When in the scope of the FOCUS MARKER or NEGATION, this marker is interpreted as present progressive. This includes cases with a verb adjacent focus marker, (38b), or where the focus marker is on a left moved focus, e.g. a *wh*-phrase, (38b). (38c) demonstrates an example with NEGATION.

- (38) a. Maria **n-** a- **kû-** thom-a barûa
₁.Maria F- SA₁- T- read-FV ₁₀.mail
 ‘Maria is reading mail.’
- b. **I-** mbi Maria a- **kû-** thom-a
 F- what ₁.Maria SA₁- T- read-FV
 ‘What is Maria reading?’
- c. Maria a- **ti-** **kû-** thom-a barûa
₁.Maria SA₁- NEG- T- read-FV ₁₀.mail
 ‘Maria is not reading mail.’

This tense has an allomorph *rî* which occurs when there is a focus *in situ*, e.g. a *wh*-phrase, (39). *kû* cannot occur here, and *rî* cannot occur in the examples in (38).

- (39) Maria a- **rî-** thom-a mbi
₁.Maria SA₁- T- read-FV what
 ‘What is Maria reading?’

The fact that the tense marker *kû* interacts with focus and negation in this way might suggest that the focus maker and negation are higher than *kû* - *kû* is only present progressive in the c-command domain of focus, or focus sensitive negation.

kû on the present progressive reading cannot double in the affirmative clause for some unknown reason. However it can double in the negative clause, (40).

- (40) Maria a- **ti-** **kû-** ig-û-a a- **ta-** **kû-** thom-a barûa
₁.Maria SA₁- NEG- T- be-VR-FV SA₁- NEG- T- read-FV ₁₀.mail
 ‘It is not the case that Maria isn’t reading mail.’

Note interestingly that when the prefixes double on AUX and V ((40)), they still observe the rigidity observed when there is no doubling - the ordering must be as in (41) on both AUX and V.

- (41) SUBJECT AGREEMENT-NEGATION-TENSE

Let us turn to the other life of *kû*. When not in the scope of focus, the reading of *kû* is a perfect one, (42).

- (42) $\hat{\text{I}}$ -ngoi rî- **kû**- un-a rû-thambu
_{5-donkey SA₅- T- break-FV 11-branch}
 ‘The donkey has (just) broken a branch (e.g. of a tree).’

This tense has another allomorph - *a*. This form occurs in the context of *wh-in situ*, (43a), or *wh*-related movement for example *wh*-movement, (43b), focus movement, (43c), or relativization, (43d). *kû* would lead to ungrammaticality in the examples in (43), and *a* would lead to ungrammaticality in (42) (unless ‘branch’ was taken to be an exhaustive focus in (42).)

- (43) a. $\hat{\text{I}}$ -ngoi rî- **a**- un-a **mbi**
_{5-donkey SA₅- T- break-FV what}
 ‘What has the donkey broken?’
- b. **I-*mbi*** îngoi rî- **a**- un-a
_{F-what 5-donkey SA₅- T- break-FV}
 ‘What has the donkey broken?’
- c. **I-rû-thambu** îngoi rî- **a**- un-a
_{F-11-branch 5-donkey SA₅- T- break-FV}
 ‘It is a branch that the donkey has broken.’
- d. Rû-thambu rû-ra îngoi rî- **a**- un-a
_{11-branch 11-that 5-donkey SA₅- T- break-FV}
 ‘The branch which the donkey has broken’

The present perfect marker can appear on V, if there is HABITUAL, (44), or future, (45) on AUX. (For some unknown reason the *a* allomorph is not good when there is AUX, so I will consider only the *kû* allomorph.)

- (44) $\hat{\text{I}}$ -ngoi i-rî-îg- **ag**- u-a rî- **kû**- un-a rû-thambu
_{5-donkey F-SA₅-be- HAB- VR-FV SA₅- T- break-FV 11-branch}
 ‘The donkey usually has broken a branch.’
- (45) $\hat{\text{I}}$ -ngoi rî- **ka**- îg-u-a rî- **kû**- un-a rû-thambu
_{5-donkey SA₅- FT- be-VR-FV SA₅- T- break-FV 11-branch}
 ‘The donkey will have broken a branch.’

This tense can also appear high on AUX alone, (46).

- (46) $\hat{\text{I}}$ -ngoi rî- **ku**- îg-u-a rî- un-ir-e rû-thambu
₅-donkey SA₅- FT- be-VR-FV SA₅-T- break-PFV-FV ₁₁-branch
 ‘The donkey has broken a branch.’

This tense can also double on AUX and V.

- (47) $\hat{\text{I}}$ -ngoi rî- **kû**- îg-u-a rî- **kû**- un-a rû-thambu
₅-donkey SA₅- FT- be-VR-FV SA₅- T- break-FV ₁₁-branch
 ‘The donkey has broken a branch.’

Perfect *kû* therefore can appear on V and AUX, albeit with some licensing.

Consider next the future tense marker *ka*. Like perfect *kû*, this tense can be low if there is a licenser in AUX, specifically, HABITUAL.

- (48) $\hat{\text{I}}$ -ngoi i-rî-îg- **ag**- u-a rî- **ka**- un-a rû-thambu
₅-donkey F-SA₅-be- HAB- VR-FV SA₅- FT- break-FV ₁₁-branch
 ‘The donkey usually will break a branch.’

The future however can occur high on AUX, without any specific conditions on its licensing, (49).

- (49) $\hat{\text{I}}$ -ngoi rî- **ka**- îg-u-a rî- un-ir-e rû-thambu
₅-donkey SA₅- FT- be-VR-HAB-FV SA₅-T- break-FV ₁₁-branch
 ‘The donkey will have broken a branch.’

The future tense can also double on AUX and V, (50).

- (50) $\hat{\text{I}}$ -ngoi rî- **kâ**- îg-u-a rî- **ka**- un-a rû-thambu
₅-donkey SA₅- FT- be-VR-FV SA₅- T- break-FV ₁₁-branch
 ‘The donkey will break a branch.’

Again despite the specifics of the licensing, a copy of the future marker can be on V and AUX.

Let us turn to the past tenses. There is a tense marker *ra* which marks that an event occurred yesterday. This marker cannot occur low alone, (51b).

- (51) * $\hat{\text{I}}$ -ngoi rî-îg-ag-u-a rî- **ra**- un-ir-e rû-thambu
₅-donkey SA₅-be-VR-HAB-FV SA₅- PST_Y- break-FV ₁₁-branch
 ‘The donkey usually had broken a branch - after every 5 minutes, yesterday.’

ra can however occur high alone, or be doubled, (52), (53).

- (52) Î-ngoï rî- **ra**- îg-ag-u-a rî-un-ir-e rû-thambu
 5-donkey SA₅- PST_Y- be-VR-HAB-FV SA₅-break-FV 11-branch
 ‘The donkey usually had broken a branch - after every 5 minutes, yesterday.’

- (53) Î-ngoï rî- **ra**- îg-ag-u-a rî- **ra**- un-ir-e rû-thambu
 5-donkey SA₅- PST_Y- be-VR-HAB-FV SA₅- PST_Y- break-FV 11-branch
 ‘The donkey usually had broken a branch - after every 5 minutes, yesterday.’

Finally, let us look at the remote past tense marker *a*. It behaves like the yesterday tense marker *a*. It cannot appear low alone on V, (54).

- (54) *Î-ngoï rî-îg-ag-u-a rî- **a**- un-ir-e rû-thambu
 5-donkey SA₅-be-VR-HAB-FV SA₅- PST_R- break-FV 11-branch
 ‘The donkey usually had broken a branch.’

a however can occur high alone, or be doubled, (55), (56).

- (55) Î-ngoï rî- **a**- ig-ag-u-a rî-un-ir-e rû-thambu
 5-donkey SA₅- PST_R- be-VR-HAB-FV SA₅-break-FV 11-branch
 ‘The donkey usually had broken a branch.’

- (56) Î-ngoï rî- **a**- ig-ag-u-a rî- **a**- un-ir-e rû-thambu
 5-donkey SA₅- PST_R- be-VR-HAB-FV SA₅- PST_R- break-FV 11-branch
 ‘The donkey usually had broken a branch.’

Although we poorly understand the deeper conditions governing the doubling of the tenses, it fair to state that the tense suffixes can double in an fseq. But why is the doubling of prefixes possible to begin with?

The most plausible hypothesis seems to be that prefixes have a dual function one of which forces them to be low in fseq and the other one of which forces them to be high. Let us pursue this option by checking whether the prefixes can have a dual function. We start with the prefix immediately following

FOCUS MARKER i.e. SUBJECT AGREEMENT, moving outwards.

For SUBJECT AGREEMENT, it is hard to see what the dual function would be. However there is morphological evidence that subject agreement markers on V and AUX are not the always the same. The auxiliary construction is a raising context (it allows idiom chunks and expletive subjects). What is striking in the AUX construction is that while SUBJECT AGREEMENT on the verb must always be class specific, the agreement marker on AUX can default to *û* (*w*) before vowels, whatever the class of the noun which occurs as the subject of AUX. Thus in (57a), ‘crocodile’, a class 7 noun must take the subject agreement of its class *kî*, on the V, but the agreement on the auxiliary can be *kî* or default *w*.

- (57) Kî-ngangi { \checkmark kî | \checkmark w }- îg-ag-u-a { \checkmark kî | *w}- urag-ir-e
 7-crocodile SA₇ | SA_D be-VR-HAB-FV SA₇ | SA_D- kill-FV
 ngombe
 9.COW
 ‘The crocodile usually has killed the cow.’

Similarly, in (58), a class 9 noun ‘lion’, must take the agreement marker of its class, *j* on V, but the agreement on AUX can be *j*, or the default, *w*.

- (58) Ciimba { \checkmark j | \checkmark w }- îg-ag-u-a { \checkmark j | *w}- ûrag-ir-e ngombe
 9.lion SA₉ SA_D be-VR-HAB-FV SA₉ | SA_D- kill-FV 9.COW
 ‘The lion usually has killed the cow.’

The above facts are perhaps a pointer of the yet to be discovered dual life of the SUBJECT AGREEMENT.

Consider next NEGATION. The two positions are independently justified by the scopes: two negations produce a double negation reading. There are therefore two positions for NEGATION in an fseq.

Let us turn to the tenses. What could be the dual function be? For some of the tenses, it can be shown that they have a dual function. Consider first the marker *kû*. It is both aspectual (perfect, progressive) and temporal (present). It is plausible that the progressive and perfect bits force the prefixes to be low while the tense bit forces it to be high. Actually in the hierarchy proposed in Cinque (1999) progressive and perfect are low in the clause, below HABITUAL.

We can actually also establish a dual function for the future tense morpheme *ka* too. This prefix has a modality reading (ability), in addition to the usual tense function, (59).

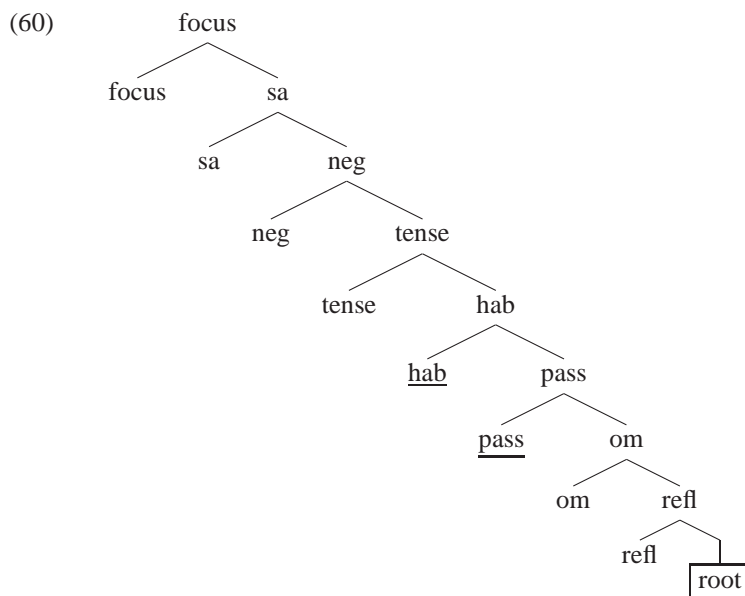
- (59) John a- **ka-** mî-ruth-a
 1.John SA₁- FT- OM₉-do-FV
 ‘John can repair it (Peter wasn’t able to repair it).’

Given that ability modality is lower than the HABITUAL (cf. Cinque (2001)), but future tense is above HABITUAL, (Cinque (1999)), we can claim that the two positions of the *ka* prefix in the auxiliary construction are a consequence of this dual function.

A dual function for the past tenses seems difficult to motivate at the present. But I think it is plausible to generalize that the prefixes have a dual function, one of which forces them to be low, and the other to be high.

Now that we have the facts, let us speculate how one would try to account for the issues. These issues are that (i) some suffixes are trapped low on V (OBJECT MARKER, REFLEXIVE), (ii) infinitive *kû* doubles, (iii) SUBJECT AGREEMENT, NEGATION and TENSE can double, (iv) the FOCUS MARKER only occurs on the highest V.

Lets us start with trapping. The derivation in chapter 3, the *4 over 2* derivation provides us with a way to account of trapping. Recall that in chapter 3 the six prefixes merged in a discontinuous fashion with FOCUS MARKER, SUBJECT AGREEMENT NEGATION, and TENSE merging above HABITUAL in their left to right scopal order (FOCUS MARKER OVER SUBJECT AGREEMENT OVER NEGATION OVER TENSE), and the the OBJECT MARKER and the REFLEXIVE merging low in the clause in their left to right order (OBJECT MARKER OVER REFLEXIVE). The OBJECT MARKER and the REFLEXIVE are therefore low in the clausal structure. We repeat the hierarchy of merge of the six prefixes in (60), where the OBJECT MARKER and REFLEXIVE merge lower than the PASSIVE, the lowest morpheme of the habitual-perfect zone.



The conclusion from the structure in (60) is that the OBJECT MARKER and the REFLEXIVE are low in the clausal hierarchy. Thus even when they precede the HABITUAL, the OBJECT MARKER and the REFLEXIVE are still lower than the HABITUAL hierarchically. It is not surprising therefore that the OBJECT MARKER and the REFLEXIVE remain low when there is a sequence of many verbs. They are always hierarchically low to begin with.

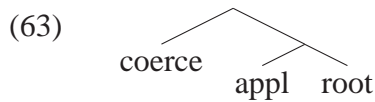
(Note that we can use the same reasoning to account for the trapping of the APPLICATIVE and ABLE2 in restructuring contexts. Recall the facts from chapter 2: In a single verb, the linear order of the four elements HABITUAL APPLICATIVE, ABLE2 and PERFECT by transitivity is as shown in (61): APPLICATIVE and ABLE2 are between HABITUAL and PERFECT.

(61) HABITUAL-APPLICATIVE-ABLE2-PERFECT.

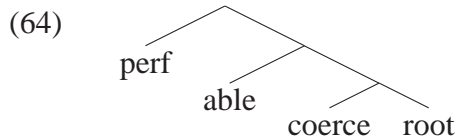
In restructuring contexts however, the suffixes are split. HABITUAL occurs on the highest verb, PERFECT on the second highest verb excluding BE, and ABLE2 and APPLICATIVE on the lowest verb (the main verb). We schematize this pattern in (62).

(62) V-HABITUAL V-PERFECT V Main verb-APPLICATIVE-ABLE2

The distribution pattern in (62), suggests that the APPLICATIVE starts low in the clause. In fact we have already shown that this has to be the case if we are to capture the binding generalization. To capture this generalization, we saw that the applicative has to start below COERCE, (63).

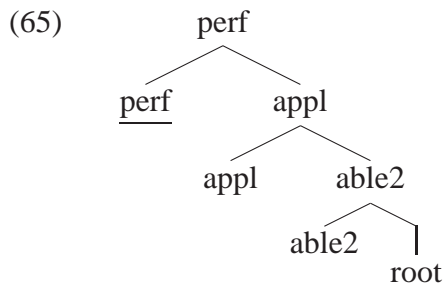


ABLE2 is a double of ABLE. We saw in chapter 1, that ABLE merges above COERCE, but below PERFECT. We schematize this in (64).



A natural way to treat doubling is to take the double to be an overt copy of the trace or landing site of a moved item (cf. Chomsky (1995) for the copy theory of movement). Since the source of the double - the ABLE that does not double is lower than PERFECT, (64), the double must also be low in the clause, it starts at the position of ABLE in (64).

We can conclude therefore that both APPLICATIVE and ABLE2 are actually low in the clausal hierarchy and therefore merge PERFECT, as shown in (65).



Since APPLICATIVE and ABLE2 are low in the clausal hierarchy, it is not surprising they get trapped on V in restructuring contexts: they are always low after all.)

Let us move to the doubling with infinitive *kû*. The generalization regarding the distribution of infinitive *kû* is that it appears everywhere, except where regular subject agreement occurs (the highest verb or the verb complement of BE). I will assume that *kû* is the default verbal agreement that can be generated anywhere where regular agreement cannot occur.

How then do we capture the doubling with *kû*, and the complementarity with SUBJECT AGREEMENT?

The solution we pursued for the PERFECT and HABITUAL can be extended here. We assume that verbs are generated outside the main feq in multiple versions, with SUBJECT AGREEMENT or *kû*, and a condition such as (66), filters the illformed verbs, whatever this condition might follow from.

- (66) In the main fseq have SUBJECT AGREEMENT on the highest verb, or complement of BE, otherwise have *kû*.

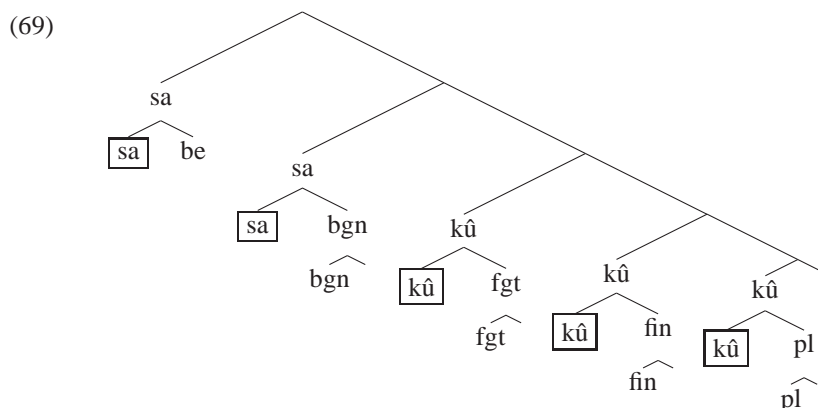
To illustrate this, consider a context with our five verbs, in (67).

- (67) BE > BEGIN > FORGET > FINISH > PLAY

The condition in (67) would lead to ‘forget’, ‘finish’ and ‘play’ to have *kû*, and ‘be’ and ‘begin’ to have SUBJECT AGREEMENT if not attraction by BE occurs. We illustrate this pattern in the sentence in (68).

- (68) Piano [j]-îg-ag- u-a [j]-amb-îr-îît-i-e [kû]-riganî-îr-i-a
 9.piano SA₉-be- HAB-VR-FV SA₉-begin-APL-PFC-IC-FV 15-forget-APL-IC-FV
 [kû]-thir-a [gû]-ceth-w-a
 15-finish-FV 15-play-PAS-FV
 ‘Someone usually has begun to forget to finish to play the piano.’

We schematize the above distribution of *kû* and SUBJECT AGREEMENT in (69).

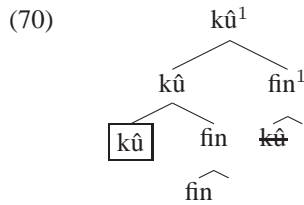


How could one capture this pattern of doubling? Pursuing the solution along the lines developed for the HABITUAL and PERFECT, we would have to say that *kû* is generated on several verbs in the fseqs of these verbs. These verbs then merge in the main fseq to license some property conveyed by the verbs, and then the verbs move to license the projections with *kû*, which merge immediately above the projection where the verb is merged. Since several of the verbs are generated with *kû* this would amount to saying that there are several *kû* projections in the main fseq. This is not that strange given that *kû* is agreement, as seen from the complementarity with SUBJECT AGREEMENT. Agreement is known to be in several places in fseq (Cinque (1999)).

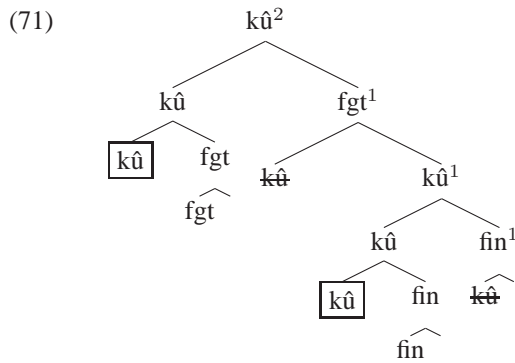
Let us illustrate the form of this solution with two verbs, ‘forget’ and

‘finish’.

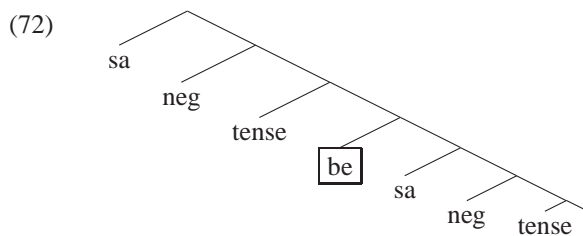
Since derivations occur bottom up, we will first merge ‘finish’ in the specifier of ‘finish¹ in the main fseq. Then we move ‘finish’ to the specifier of *kû*¹ in the main fseq, to license the features of *kû*. This is shown in (70).



In the second step, ‘forget’ merges in [Spec fgt¹], and then moves to [Spec, *kû*²] to license the features of *kû*. This is illustrated in (71).



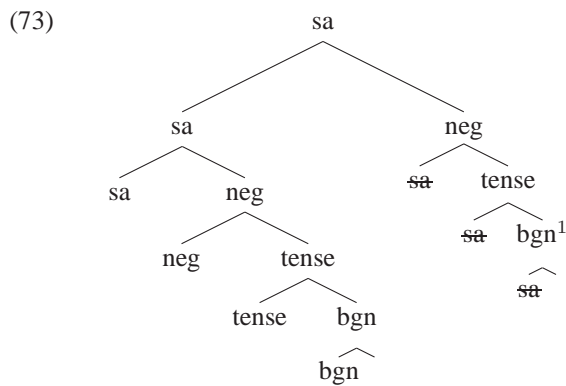
Let us turn to the three other prefixes that double - SUBJECT AGREEMENT, NEGATION and TENSE. These prefixes double on the highest verb, or on the verb complement of BE. These prefixes therefore occur in contexts where the infinitive *kû* is not found. We can account for the doubling of these prefixes by saying there are two projections for each of these prefixes in the main fseq. Since these prefixes occur on the highest verb, or on the verb immediately following BE, it is plausible that one series of projections for these prefixes is above BE, and the other one immediately below BE in the main fseq as shown in (72).



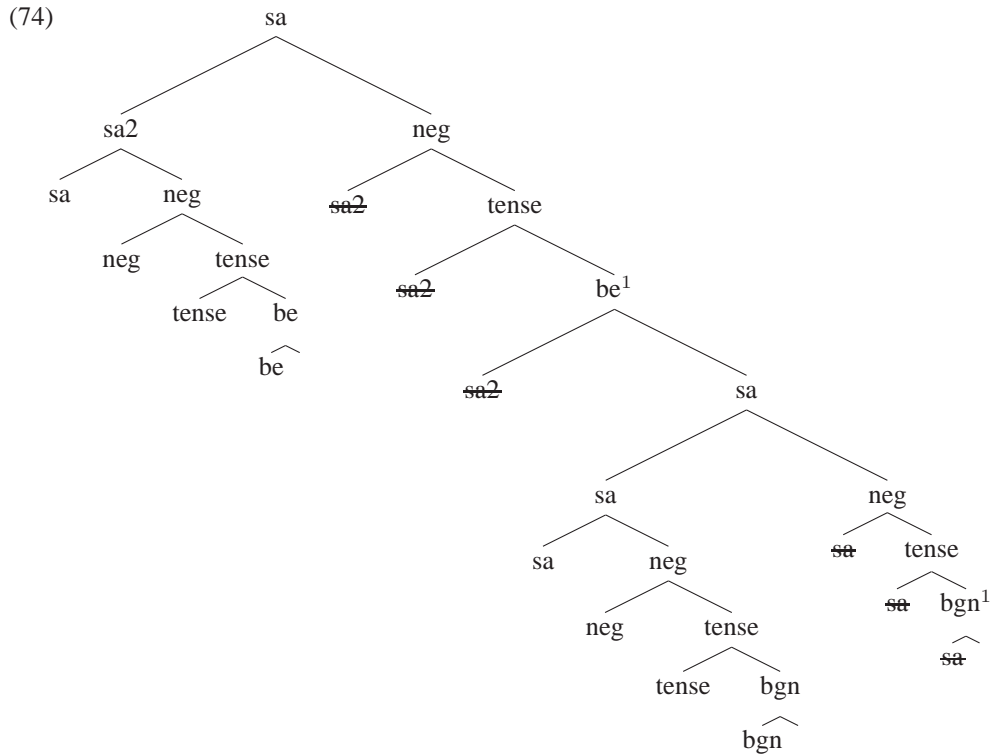
We can extend the account of doubling of *kû* above to these prefixes. The

verbs are generated randomly with the prefixes, and a condition such as the prefixes occur on the verb that ends as the highest, or as the complement of BE filters the verbs that can license these projections. This condition will interact with the requirement that movement of the verbs be order to preserving, to filter the range of verbs that can license the prefixes in the main projection line.

To illustrate a possible derivation, consider a scenario where the prefixes double on BE, and ‘begin’. First ‘begin’ will merge in [Spec, bgn¹] in the main fseq. Then it will move cyclically past [Spec, tense], [Spec, neg], and [Spec, sa], as shown in (73), to license these projections.



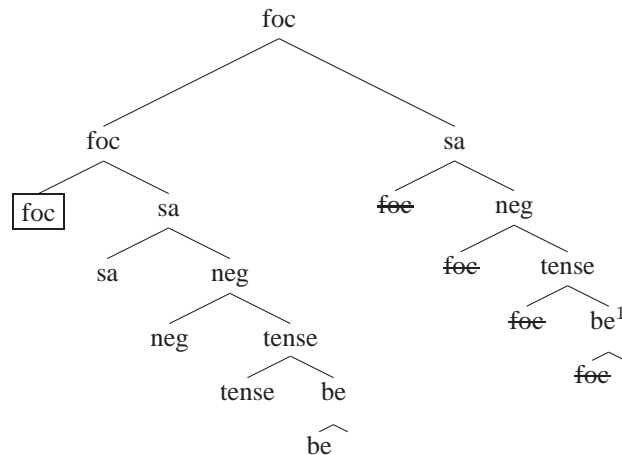
In the second step, we merge BE which has the second set of prefixes in [Spec, BE], and BE then moves cyclically past [Spec, tense], [Spec, neg]and [Spec, sa], to license these prefixes which are merged initially in the fseq of BE. This structure is shown in (74).



The structure above gives us the doubling of prefixes on the highest verb, and the verb following BE.

Consider finally the FOCUS MARKER, the prefix that does not double and which occurs on the highest verb. This prefix has to be merged on the verb that will end up as the highest in the functional sequence. This means that several verbs will be generated with the FOCUS MARKER, and the verb that ends high, and conforms to all the conditions that we postulated, e.g. that movement be order preserving, that HABITUAL attracts the highest verb e.t.c will satisfy the highest verb requirement for the FOCUS MARKER and lead to filtering of other verbs. In the context in (74), the FOCUS MARKER would be merged in the fseq of BE, and the verb containing BE would have one extra step of movement to license the FOCUS MARKER. We schematize this structure in (75), just for the part with BE.

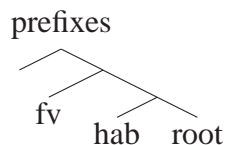
(75)



A.4 The final vowels

We saw in chapter 4 (and we can easily confirm with the examples in this chapter), that there are as many final vowels as there are verbs when we have a sequence of restructuring verbs. We argued in this chapter that the final vowels are merged between the prefixes and HABITUAL on a single verb.

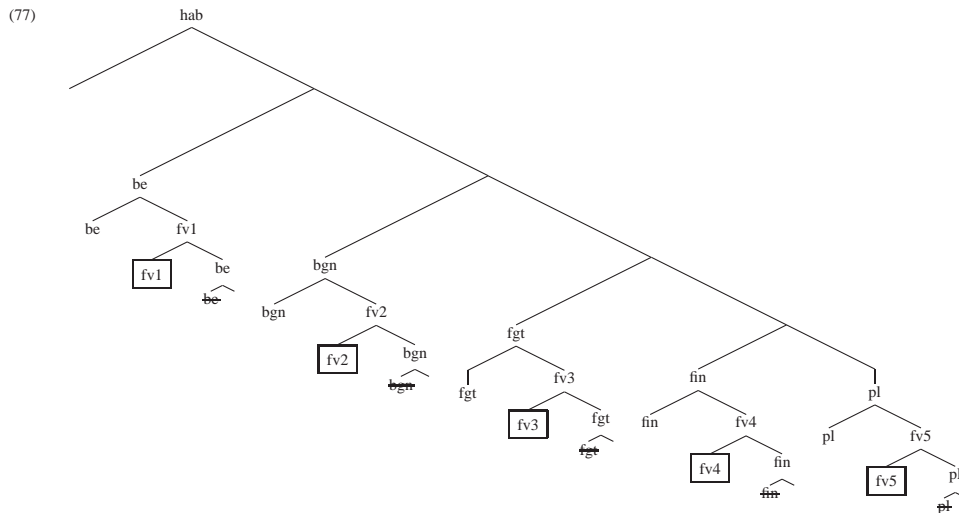
(76)



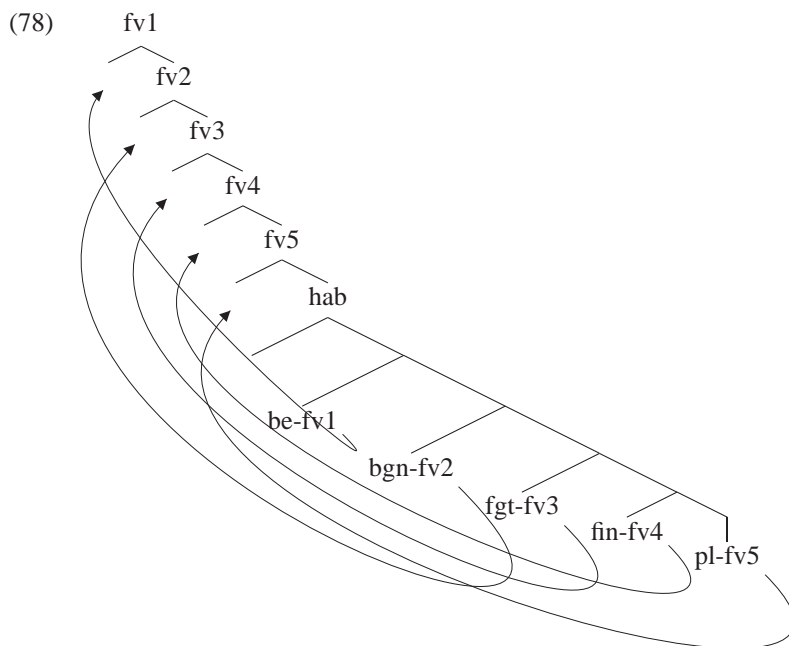
Since we have no reason to think that the final vowels merge in a different position when there are many verbs, then we can assume that final vowels merge between the prefixes and the HABITUAL in restructuring contexts.

Extending the now familiar solution to the final vowels, we will assume that several final vowel projections are merged in the main projection line between the prefixes and the HABITUAL. Second, we will assume that verbs are generated in their fseqs with the final vowels, and these must license the projections with final vowels in the main fseq.

To illustrate how this solution will work, let us imagine a context with five verbs: ‘be’, ‘begin’, ‘forget’, ‘finish’, ‘play’. Each of these verbs will have a final vowel generated in their fseq. Since the verbs merge lower than the FINAL VOWEL in their fseq, these verbs will move within their fseq to precede the FINAL VOWEL. These verbs will then be merged in the main fseq. By our assumptions (see section A.2, all the verbs will merge below HABITUAL). We show this structure in (77), where the final vowels on the verbs are put in boxes.



The five projections with the final vowels are then merged on top of the structure in (77). To illustrate the derivation, let us simplify the structure in the left branches, and have just the verb plus the final vowel. In order to get the verbs license the final vowel projections, and at the same time get the verbs in the right hierarchical order, we have to require that the verbs move in an order preserving way. Thus 'play', the lowest verb will move to license the lowest FV projection, fv5 in (78), and 'be' will move to license the highest fv projection, fv1 in (78).



We need to assume here that the fact that the FINAL VOWEL attracts the verbs in an order preserving way is due to locality. Movements of the VPs will therefore count as the same movement, although it is not very clear to us what this same movement would be.

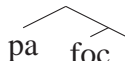
A.5 The plural addressee

There are at least two issues that we need to capture with the PA. The first is that the PA occurs on the topmost or the lowest verb in the main projection line. The second is that PA can double on the topmost and the lowest verb in the main projection line. We repeat two examples here to demonstrate the pattern. The first example shows the PA occurring on the first verb in an imperative, and the second example shows the PA doubling in the declarative sentence.

(79) Amb-îr-i-a- **ni** kû-rig-an-îr-i-a kû-romb-a
 begin-APL-IC-FV- PA ₁₅-forget-AN-APL-IC-FV ₁₅-beg-FV
 ‘begin to forget to beg!’

(80) I-ba-mb-îr-i-e- **ni** kû-rig-an-îr-i-a kû-romb-a- **ni**
 F-begin-APL-IC-FV- PA ₁₅-forget-AN-APL-IC-FV ₁₅-beg-FV- PA
 ‘They began to forget to beg (you guys)’

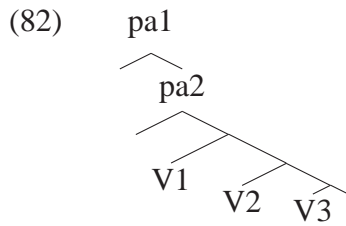
How could we capture these facts? Recall that in chapter 4, we argued that the plural addressee is merged above the focus marker on a single verb, (81).

(81) 

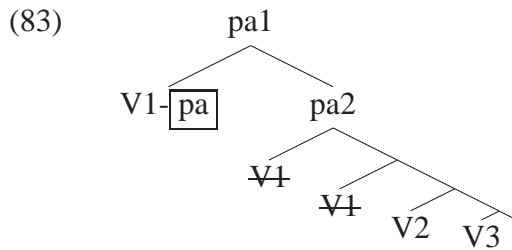
We have no reason to think that it merges in a different position in multi-verb constructions.

Let us turn to the first issue. How is it the PA ends on the topmost or lowest verb in the main projection line?

Pursuing again the form of our solution we would have to say, that all the verbs are generated with a plural addressee, and some mechanism ensures that the PLURAL ADDRESSEE occurs only on the highest or the last verb. To show how this solution might work, let us assume that there are two projections for the PLURAL ADDRESSEE in the hierarchy of the clause, as shown in (82). Let us also assume that there are three verbs below the PLURAL ADDRESSEE.

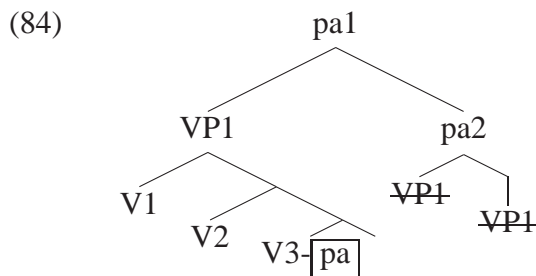


Then we can get the PLURAL ADDRESSEE on the highest verb by moving V1 cyclically past [Spec, pa2], and [Spec, pa1], (83).



When V1 moves cyclically past [Spec, pa2] and [Spec, pa1], it licenses these projections.

To get the PLURAL ADDRESSEE on the lowest verb, we move the whole complement of pa2 (VP1) cyclically past [Spec, pa2], and [Spec, pa1], (84)



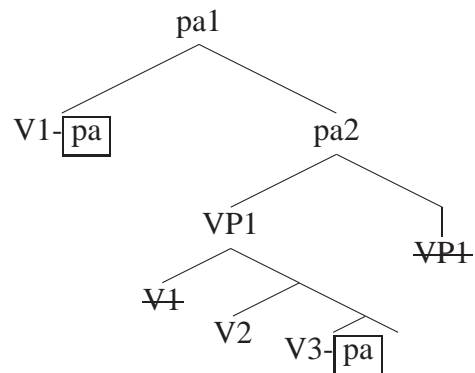
When VP1 moves cyclically past [Spec, pa2] and [Spec, pa1], it licenses these projections.

We capture distribution of the PLURAL ADDRESSEE (on the highest or lowest verb in the main projection line) from the two movements that license the PLURAL ADDRESSEE - attraction of the highest verb, or the whole complement.

To capture the doubling of the PLURAL ADDRESSEE on the lowest and the highest verb, we would first move the complement of pa2 to the Spec of pa2, then we would sub-extract the highest verb and move it to [Spec, pa1].³

³The success of this account relies on the possibility of extraction from specifiers, contrary to Koopman and Szabolcsi (2000).

(85)



A.6 The matching approach

We have shown in this appendix that it is possible to account for the various positioning of a number of suffixes, namely, the HABITUAL, the PERFECT, the final VOWELS and PLURAL ADDRESSEE on the (restructuring) verbs by assuming that these suffixes are first merged in the fseq of the (restructuring) verbs. These verbs then merge and move in the main fseq under locality restrictions to license projections with the HABITUAL, the PERFECT, the FINAL VOWEL, and the PLURAL ADDRESSEE in the main fseq. The projections in the main fseq are licensed by a matching suffix in the (restructuring) verb.

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