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The Exponence of TAM in Bakweri*

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1. Introduction

This paper describes the realization of tense-aspect-mood (TAM) morphology in the Bakweri (Bantu A.22, Cameroon) verb. Four different morphological parameters – (i) the tone of the subject prefix, (ii) the choice of the tense prefix, (iii) the choice of the inflectional suffix commonly called the 'final vowel', and (iv) the tonal suffix assigned to the verb stem – vary depending not only on the tense, but also on polarity and clause type. In particular, the TAM morphology on the verb is realized differently in contexts with NP-movement, such as relative clauses and *wh*-questions, compared with contexts having no movement, such as declarative matrix clauses. Moreover, the morphology differs depending on whether the NP that moves is a subject or an object.

It is shown that some of the morphological differences that occur on the verb in relative clauses and *wh*-questions are predictable across the tenses. For example, the subject prefix acquires a H tone in all tenses in object relative clauses and object *wh*-questions. However, other morphological differences that occur between non-extracted, subject-extracted, and object-extracted contexts are not wholly predictable. For example, the final vowel in the Past tense is *-a* when there is no NP movement and when there is movement of the subject NP but is *-e* when there is movement of the object NP; in the Past Negative, the final vowel is *-ɛ* in contexts with movement of the subject or object NP, but *-e* when there is no movement of the NP. Therefore, the quality of the final vowel does not vary in a consistent way across the different syntactic configurations.

These patterns of allomorphy across the different syntactic configurations have potentially important theoretical implications because the form of the different allomorphs of the subject prefix, tense prefix, final vowel, and tonal suffix on the verb stem cannot be determined until after all syntactic operations. In addition, the rules that spell out the different allomorphs must be sensitive to whether NP movement has taken place and whether the NP that moved is a subject or an object.

2. Bakweri Verbs

Verbs in Bakweri have a morphological structure typical of Bantu languages, as shown in the template in (1). The stem, marked here by #, is composed of the verb root, a position for extensions, and the final inflectional suffix, or 'final vowel' (FV). In the prefix domain is the subject prefix (SP), an inflectional position for a tense or negation marker, and the object prefix (OP).

(1) Bakweri verbal template
SP – Tns/Neg – OP # Root – Ext – FV

Each tense in Bakweri can be described as a constellation of four different properties: (i) the tone of the subject prefix, (ii) the tone and quality of the tense/negation prefix,

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(iii) the quality of the final vowel, and (iv) the tonal suffix that is assigned to the final vowel. The examples in (2) show how these morphophonological properties of the verb vary simultaneously across tenses in phrase-final position in matrix clauses.

(2) Bakweri verbs in matrix clauses (non-extracted context)

			Tense	SP	Tns/Neg	FV
a.	na-ø#zoz-a	'I will wash'	Future	ø	-ø-	-à
b.	na-zí#zoz-e	'I did not wash'	Past Negative	ø	-zí-	-è
c.	na-zá#zoz-á	'I will not wash'	Future Negative	ø	-zá`-	-á
d.	na-ma#zoz-á	'I washed'	Past	ø	-ma-	-á
e.	na-zí#zóz-í	'I have not washed yet'	Incompletive	ø	-zí	-í
f.	na-ø#zoz-î	'I have washed'	Perfective1	ø	-ø-	-î
g.	ná$^{!}$-má#zoz-a	'I have washed'	Perfective2	H	-`má`	-a

In the majority of tenses in Bakweri, the lexical tone of the subject prefix is not altered by the tense-aspect-mood morphology (hence the ø in the SP cell), but in the Perfective2 tense, the subject prefix is required to be H. As for the other three morphological variables, tenses vary depending on the tense/negative prefix (*-ø-*, *-zí-*, *-zá`-*, *-ma-*, *-zí-*), the final vowel (*-a*, *-e*, *-i*), and the tonal suffix realized on the FV (L, H, HL). The precise quality of the tense prefix, final vowel, and tonal suffix on the stem is essentially an idiosyncratic property of the tense that has to be learned as part of the morphology of the tense. Each of these properties is discussed in further detail in the following subsections.

2.1 Subject prefixes

In general there is a lexical contrast in Bakweri between /L/ and /H/ subject prefixes, as shown by the pair of examples in (3) from the Future tense.

(3) Contrast between /L/ and /H/ subject prefixes in the Future
a. na-ø#zoz-a 'I will wash'
b. vá-ø#zoz-a 'they will wash'

The inventory of Bakweri subject prefixes is in (4). Of the human (cl. 1/2) subject prefixes, only the 3pl *vá-* is H. Of the non-human subject prefixes, only cl. 9 *e-* is L.

(4) Bakweri subject prefixes

1sg	na-	1pl	i-
2sg	o-	2pl	e-
3sg	a-	3pl	vá-
cl. 5	lí-	cl. 6	má-
cl. 7	é-	cl. 8	vé-
cl. 9	e-	cl. 14	wó-

As shown by the pair of examples in (5) from the Perfective2 tense, some tenses and grammatical constructions in Bakweri neutralize the distinction between /L/ and /H/ subject prefixes by requiring the SP to be H.

(5) Neutralization of all subject prefixes to H in the Perfective2
   a. ná!-má#zoz-a 'I have washed'
   b. vá!-má#zoz-a 'they have washed'

Other tenses and configurations that require the SP to be H include the Subjunctive, the Consecutive, 'when' Past clauses, 'since' Past Negative clauses, and in any tenses when there is movement of an object NP, as will be described in Section 3 below.

2.2 Tense/negative prefix

A second parameter that varies across tenses and syntactic configurations is the segmental and tonal make-up of the tense/negative prefix. Illustrated in (6) are the different tense/negation prefixes that occur in Bakweri. Many affirmative tenses have a null tense prefix, and there are a handful of other tense prefixes that appear in only one tense in the affirmative form. There are four different negation prefixes that occupy the same morphological position as the tense prefix in affirmative forms: *-zí-*, *-zá`-*, *-zi-*, and *-zóo-*.

(6) Bakweri tense/negative prefixes

prefix	affirmative tenses	prefix	negative tenses
-ø-	Future, Subjunctive, Perfective1, and others	-zá`-	Future Negative, Perfective Negative, Imperative Negative
-ma-	Past	-zí-	Past Negative, Incompletive
-`má`-	Perfective2	-zi-	Subjunctive Negative
-oô-	Indefinite Future	-zóo-[1]	Indefinite Future Negative
-eé-	Before clause		
-áa-	Inceptive		

2.3 FV

There are three different final vowels that occur in matrix clauses: *-a*, *-e*, *-i*. Of these three FVs, *-a* can be considered the 'default', as it occurs in most tenses of the language. The Past Negative and the Subjunctive have *-e*, and the Perfective1, the Perfective Negative, and the Incompletive have *-i*. There is a fourth FV, *-ɛ*, but it only occurs in contexts where an NP is extracted (i.e. in relative clauses and *wh*-questions), as described in Section 3 below.

While the tense does in part determine the quality of the FV, the FV that is preferred by the tense can be overridden by other factors. Monosyllabic, trisyllabic and longer stems often have lexically specified vowels that do not vary across tenses. For example, the following examples in (7) show that while the CVC root *zòz-* 'wash', which does not have a lexically specified final vowel, has *-a* in the Infinitive and *-i* in the Perfective1, the monosyllabic root *và* 'divide' and the trisyllabic root *làkizɛ* 'forgive' maintain their lexical vowels in all contexts.

[1] The similarity in form between the Indefinite Future tense marker *-oô-* and the Indefinite Future Negative marker *-zóo-* strongly suggests that *-zóo-* is comprised of two components: negative *-zV-* and tense *-oo-*. What is not directly obvious, however, is how the tone of *-zóo-* arises from the combination of these two elements, given the rise-fall (LHL) tone on the tense marker *-oô-*.

(7) Lack of variation in the FV of monosyllabic and trisyllabic stems

a.	li-ø#zoz-á	‘to wash’	na-ø#zoz-î	‘I have washed’
b.	li-ø#vaá	‘to divide’	na-ø#vaâ	‘I have divided’
c.	li-ø#lakíz-ɛ́	‘to forgive’	na-ø#lakízɛ̂	‘I have forgiven’

2.4 Tonal suffix on the verb stem

There are four tonal suffixes that appear on the verb stem in matrix clauses: Ø, L, H, and HL. Tenses with a Ø tonal suffix include the Perfective2, the Consecutive, the Indefinite Future, the Indefinite Future Negative, and the Inceptive. Tenses with a L tonal suffix include the Future, the Past Negative, the Perfective Negative, and the Subjunctive. Tenses with a H suffix include the Future Negative, the Past, the Imperative Negative, the Subjunctive Negative, the Incompletive, and the Consecutive Negative. Tenses with a HL suffix include the Perfective1 and the Imperative, plus other tenses in contexts in which an NP is extracted. A fifth tonal suffix, LH, occurs in contexts in which an NP is extracted, as in relative clauses and *wh*-questions.

The realization of the tonal suffixes in Bakweri can be described relatively simply. The examples in (8) below show that the tonal suffix appears on the FV and on all free moras to the left. (The examples with a /L/ suffix in (8a-b & 8a′-b′) and with a /Ø/ suffix in (8c-d & 8c′-d′) surface the same. The evidence distinguishing these two suffix types, in contexts where the verb is followed by a complement, is presented below.) In H (8e-f & 8e′-f′) and HL (8g-h & 8g′-h′) suffixes, the H spreads leftward across the stem. The initial mora of the stem bears an underlying /L/ or /H/, and this tone blocks the suffix H from being spread onto the stem-initial mora.

(8) Four tonal suffixes in Bakweri matrix clauses

	/L/ verbs		Tense	Suffix
a.	na-zí#zoz-e	‘I did not wash’	Past Neg	L
b.	na-zí#lakiz-ɛ	‘I did not forgive’		
c.	ná!-má#zoz-a	‘I will wash’	Perf2	Ø
d.	ná!-má#lakiz-ɛ	‘I will forgive’		
e.	na-ma#zoz-á	‘I washed’	Past	H
f.	na-ma#lakíz-ɛ́	‘I forgave’		
g.	na-ø#zoz-î	‘I have washed’	Perf1	HL
h.	na-ma#lakíz-ɛ̂	‘I have forgiven’		

	/H/ verbs		Tense	Suffix
a′.	na-zí#fáf-e	‘I did not hit’	Past Neg	L
b′.	na-zí#kɔ́kiz-ɛ	‘I did not punish		
c′.	ná!-má#fáf-a	‘I will hit’	Perf2	Ø
d′.	ná!-má#kɔ́kiz-ɛ	‘I will punish’		
e′.	na-ma#fáf-á	‘I hit’	Past	H
f ′.	na-ma#kɔ́kíz-ɛ́	‘I punished’		
g′.	na-ø#fáf-i	‘I have hit’	Perf1	HL
h′.	na-ma#kɔ́kíz-ɛ̂	‘I have punished		

There is no downstep between the root H and the suffix H in forms like *na-ma#fáf-á* ‘I hit’ and *na-ma#kɔ́kíz-ɛ́* ‘I punished’, from the Past, and *na-ma#kɔ́kíz-ɛ̂* ‘I have

punished', from the Perfective1. This is consistent with other data in Bakweri in which Hs that are adjacent on the surface are not separated by a downstep. Downstep occurs in Bakweri only when there is a floating L between two Hs. (The form *na-ø#fáf-i* 'I have hit' is peculiar among the data above in that the HL suffix becomes L after the root H, i.e. *na-ø#fáf-î→ na-ø#fáf-i*.) [2]

In contexts where a H immediately precedes a /L/ root and there is a suffix H, there is a plateau effect, where the suffix H spreads onto the stem-initial mora, and the initial syllable of the /L/ stem surfaces as a downstepped H, i.e. H#LH → H!#HH. For example, the following examples in (9) show that the /L/ root *zóz-* 'wash' is realized with a downstepped H when the H object prefix *vá* or the H negative prefix *-zí-* immediately precedes the stem and there is a H suffix following the root L.

(9) Plateau effects across the stem boundary

a.	na-ma-vá!#zóz-á	'I washed them'	cf. na-ma-mo#zoz-á	'I washed him'
b.	na-zí!#zóz-í	'I haven't washed yet'	cf. na-zí-mo#zoz-í	'I haven't washed him yet'

Two other quirks of the pattern of the tonal suffixes that occur in Bakweri are in the Infinitive and the Subjunctive tenses. As shown in (10), the Infinitive is unique among the tenses of Bakweri in that the tonal suffix assigned to the FV depends on the lexical tone of the verb root. There is a kind of tonal polarity effect, in that the tonal suffix assigned to the stem is the opposite tone of the root. In /L/ roots, a H suffix is assigned to the FV; in /H/ roots, a L suffix is assigned to the FV.

(10) Polarity in the tonal suffix in the Infinitive

a.	li-ø#zoz-á	'to wash'	li-ø#lakíz-ɛ́	'to forgive'	/L/ roots
b.	li-ø#fáf-a	'to hit'	li-ø#kɔ́kiz-ɛ	'to punish'	/H/ roots

As shown by the data in (11), the Subjunctive differs from other tenses is that in the absence of an object prefix, the stem is assigned a L tonal suffix. However, in the presence of an object prefix, the stem is assigned a H tonal suffix.

(11) Suffix H with an object prefix in the Subjunctive

a.	ó-ø#zoz-e	'wash'	ó-ø-mo#zoz-é	'wash him'	ó-ø-vá!#zóz-é	'wash them'/L/
b.	ó-ø#fáf-e	'hit'	ó́-ø-mo#fáf-é	'hit him'	ó-ø-vá#fáf-é	'hit them' /H/

While the Ø and L tonal suffixes are both realized as L when the verb is in phrase-final position, the presence of a word following the verb distinguishes these two tonal suffixes. In phrase-medial position, a suffix H is assigned to the stem in the Ø tenses, but the L tenses show no such effect.

The examples in (12) show that L tenses followed by a complement surface just as in forms without a complement: the stem is L.

[2] A similar kind of OCP effect is the deletion of the H of the negative tense prefix *-zá`-* following a H subject prefix in forms like *vá-za#zoz-á* 'they will not wash' (cf. *na-zá#zoz-á* 'I will not wash'). This is not a general process, as the H of the negative tense prefix *-zí-* is not deleted after a H (cf. *vá-zí#zoz-e* 'they did not wash') and a root H is never deleted following a H prefix.

(12) L tenses followed by a complement

a.	na-ø#zoz-a	na-ø#zoz-a lingongo	'I will wash Lingongo'	Future
b.	na-zí#zoz-e	na-zí#zoz-e lingongo	'I did not wash Lingongo'	Past Neg.
c.	na-zá-zoz-i	na-zá#zoz-i lingongo	'I have not washed Lingongo'	Perf. Neg.
d.	ó-ø#zoz-e	ó-ø#zoz-e lingongo	'you should wash Lingongo'	Subjunctive

As the following examples in (13) show, Ø tenses differ from the L tenses in that when a complement follows the verb, a suffix H surfaces on the stem. The examples in (13a-e) illustrate the Perfective2, Consecutive, Indefinite Future, Indefinite Future Negative and the Inceptive, respectively.

(13) Ø tenses followed by a complement

a.	ná!-má#zoz-a	ná!-má#zoz-á lingongo	'I have washed Lingongo'
b.	zi-ná-ø#zoz-a	zi-ná-ø#zoz-á lingongo	'and then I washed Lingongo'
c.	n-oô#zoz-a	n-oô#zoz-á lingongo	'I will wash Lingongo (someday)'
d.	na-zóo#zoz-a	na-zóo#zoz-á lingongo	'I will not wash Lingongo'
e.	n-áa#zoz-a	n-áa#zoz-á lingongo	'I just started washing Lingongo'

3. Matrix clauses vs. subject-extraction vs. object-extraction

The morphological parameters that describe each of the tenses of Bakweri – the tone of the subject prefix, the choice of the tense/negation prefix, the quality of the FV, and the tonal suffix assigned to the stem – potentially vary when the verb is found in a subject- or object-relative clause or a subject- or object-*wh*-question. This section shows how six of the tenses viz. the Future, the Past Negative, the Future Negative, the Past, the Incompletive, and the Perfective1, vary across these syntactic configurations.

We see in this section that the tone of the subject prefix is always H in contexts with object extraction. In general the tense/negation prefixes remain the same across the different contexts, except in the Past tense. The final vowel varies across the syntactic configurations in a few tenses, and so does the tonal suffix.

3.1 Future

As seen above and repeated here in (14), the Future tense in matrix clauses is formed with a null tense marker, the FV *-a*, and a L suffix.

(14) Future morphology in matrix clauses: -ø-...-à

a. na-ø#zoz-a 'I will wash'

In contexts where a subject NP is extracted i.e. in subject-relative clauses and subject *wh*-questions, the tonal suffix assigned to the verb stem in the Future tense differs from the matrix clause context. As the following examples in (15) show, the verb has a LH suffix in subject-extracted contexts, though the quality of the FV and tense prefix are the same.[3]

[3] The final rise on the stem is not an intonational effect and can be shown to be the LH tonal pattern. When parallel examples are not utterance-final, the LH suffix is also assigned to the stem. Examples like *emó a-ø#lakiz-é lingongo* 'the one who will forgive Lingongo' and *njá-ø#kakan-é lingongo* 'who will promise Lingongo?' support the view that there is a LH tonal suffix. Although the LH suffix is realized as a H in phrase-medial position, there is no leftward spreading of the H, as in contexts where the tonal suffix is H like the Future Negative: *emó a-zá-mo#kakán-é* 'the one who will not promise

(15) Future morphology in subject-extracted contexts: -ø-...-ă
a. emó a-ø#zoz-ă ‘the one who will wash’
b. emó a-ø#lakiz-ĕ ‘the one who will forgive’
c. njá-ø-mo#zung-ă (</njé-a-/) ‘who will rescue him?’
d. njá-ø-mo#kakan-ĕ ‘who will promise him?’

The morphology on the stem remains constant in the Future tense in both subject-extracted and object-extracted contexts – the FV is *-a* and there is a LH suffix. There is, however, an important difference between the two contexts, as the following examples in (16) show; the subject prefix is always H in the object-extracted context. As we will see throughout the following subsections, this is a consistent property of object-extracted contexts across all tenses, i.e. the SP is always H.

(16) Future morphology in object-extracted contexts: SṔ-ø-...-ă
a. emó ! ná-ø#zoz-ă ‘the one I will wash’
b. njé ! ná-ø#zoz-ă ‘who will I wash?’

3.2 Past Negative

The example in (17) repeats from above the fact that the Past Negative tense is formed in matrix clauses with the negative prefix *-zí-*, the FV *-e*, and a L suffix.

(17) Past Negative morphology in matrix clauses: -zí-...-è
a. na-zí#zoz-e ‘I did not wash’

The examples in (18) show that the FV *-ɛ* is found in subject-extracted contexts along with the LH tonal suffix.

(18) Past Negative morphology in subject-extracted contexts: -zí-...-ĕ
a. emó a-zí-mo#zoz-ĕ ‘the one who didn’t wash him’
b. nj-á!-zí-mo#zoz-ĕ ‘who didn’t wash him?’

The examples in (19) show that the FV *-ɛ* and the LH tonal suffix are also found in the object-extracted context, with the difference that the subject prefix is H.

(19) Past Negative morphology in object-extracted contexts: SṔ-zí-...-ĕ
a. emó ! ná-zí#zoz-ĕ ‘the one I didn’t wash’
b. njé ! á-zí#zoz-ĕ ‘who didn’t he wash?’

3.3 Future Negative

The example in (20) shows that the Future Negative is formed with the tense/negation marker *-zá`-*, the FV *-a*, and the H tonal suffix in matrix clauses. (The floating L on

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him’, *emó a-zá#kakán-é lingongo* ‘the one who will not promise Lingongo’. The lack of leftward spreading of the H is predicted only if there is a L to the left of the H. Further evidence comes from the pattern of /H/ CVC roots, as in *emó a-ø#fá!f-á lingongo* ‘the one who will hit Lingongo’ where the L of the tonal suffix triggers downstep of the H of the tonal suffix on the FV.

the tense prefix accounts for lack of plateau on stem-initial syllable, which would otherwise be expected when a root L is preceded and followed by a H.)

(20) Future Negative morphology in matrix clauses: -zá`-...-á
  a. na-zá#zoz-á ‘I will not wash’

The examples in (21) show that the Future Negative has the same morphological exponence as the matrix clause examples, with the tense/negation marker *-zá`-*, the FV *-a*, and a H suffix.

(21) Future Negative morphology in subject-extracted contexts: -zá`-...-á
  a. emó a-zá-mo#zoz-á ‘the one who will wash him’
  b. nj-á!-zá-mo#laal-á ‘who won’t step on him?’

The examples in (22) show that the Future Negative in object-extracted contexts also has *-zá`-*, *-a*, and a H suffix, but it differs from the other forms in requiring the subject prefix to be H. (The H of *-zá`-* is deleted following a H subject prefix, which is a general process that applies to *-zá`-*, as noted above in footnote 2.)

(22) Future Negative morphology in object-extracted contexts: SṔ-zá`-...-á
  a. má!m-á-za#lá ‘what won’t he eat?’
  b. njé ! á-za#lakíz-ɛ́ ‘who won’t he forgive?’

3.4 Past

The example in (23) shows that the Past tense is formed with the *-ma-* tense prefix, the FV *-a*, and the H tonal suffix, when the verb is in a matrix clause.

(23) Past morphology in matrix clauses: -ma-...-á
  a. na-ma#zoz-á ‘I washed’

Subject-extracted forms of the Past tense, shown in (24), differ from the matrix clause examples in that the tense prefix has different tonal properties. While the tense prefix *-ma-* is used in matrix clauses, *-`má`-* is used in the subject-extracted forms.

(24) Past morphology in subject-extracted contexts: -`má`-...-á
  a. emó a-má-mo#zoz-á ‘the one who washed him’
  b. njá!-má-mo#zoz-á ‘who washed him?’

The object-extracted examples in (25) show that the form of the tense prefix, *-ma-* is the same as in matrix clauses, but a different FV and a different tonal suffix are used, and the subject prefix bears a H. In these examples, the FV is *-e*, and the tonal suffix is HL.

(25) Past morphology in object-extracted contexts: SṔ-ma-...-ê
  a. emó ! ná-ma#zoz-ê ‘the one I washed’
  b. njé ! ná-ma#zoz-ê ‘who did I wash?’

3.5 Incompletive

The example in (26) shows the morphology of the Incompletive in matrix clauses. The tense/negation marker *-zí-* is used, along with the FV *-i*, and the H tonal suffix.

(26) Incompletive morphology in matrix clauses: -zí-...-í
a. na-zí!#zóz-í 'I have not washed yet'

The subject-extracted examples in (27) have the tense/negation prefix *-zí-*, the FV *-i*, and the H tonal suffix.

(27) Incompletive morphology in subject-extracted contexts: -zí-...-í
a. emó a-zí-mo#zoz-í 'the one who hasn't washed him yet'
b. njé a-zí-mo#zoz-í 'who hasn't washed him yet?'

The examples in (28) show that the Incompletive has the same morphology in object-extracted contexts (*-zí-*, *-i*, and the H suffix), with the exception that the subject prefix is H in object-extracted contexts.

(28) Incompletive morphology in object-extracted contexts: SṔ-zí-...-í
a. emó ! ná-zí!#zóz-í 'the one I haven't washed yet'
b. njé ! á-zí!#zóz-í 'who hasn't he washed yet?'

3.6 Perfective1

The Perfective1 is formed with a null tense prefix, the FV *-i*, and the HL tonal suffix, as shown by the example in (29).

(29) Perfective1 morphology in matrix clauses: -ø-...-î
a. na-ø#zoz-î 'I have washed'

In subject-extracted contexts, shown in (30), the tense prefix, and the FV *-i* are the same, but the tonal suffix differs; the H tonal suffix is found in subject-extracted contexts.

(30) Perfective1 morphology in subject-extracted contexts: -ø-...-í
a. emó a-ø-mo#zoz-í 'the one who has washed him'
b. nj-á-mo#zoz-í 'who has washed him?'

The morphology of the Perfective1 object-extracted contexts is shown by the examples in (31). In these forms, the subject prefix bears a H, the FV is *-i*, and the HL tonal suffix is used. These forms are therefore the same as in matrix clauses, except for the tone of the subject prefix.

(31) Perfective1 morphology in object-extracted contexts: SṔ-ø-...-î
a. emó ! nó!-ø#zóz-î 'the one I've washed'
b. njé ! ná!-ø#zóz-î 'who have I washed?'

4. *Wh* in-situ

An interesting property of the object *wh*-questions in Bakweri is that the *wh*-element can be left in-situ. When the *wh*-element is left in-situ, the verb has the same morphology as in matrix clauses, which have movement of an NP.

This is shown in (32) below with examples from the Future, the Past, and the Perfective1. These examples all have trisyllabic stems which do not allow for

verification of the quality of the final vowel, but the examples have the same tonal suffix and tense prefix as their matrix clause counterparts with no extraction.

(32) *wh* in-situ in the Future, Past, and Perfective1

a.	a-ø#lakiz-ɛ njê	'who will he forgive?'	Future: -ø-...-à
b.	a-ma#lakíz-ɛ́ njê	'who did he forgive?'	Past: -ma-...-á
c.	a-ø#lakíz-ê njê	'who has he forgiven?'	Perfective1: -ø-...-î

4.1 Other *wh*-questions

This section shows that other *wh*-questions with object-extraction have the same morphological effects as *njê* 'who', described above. The examples in (33-35) show that 'what', 'where', and other *wh*-elements such as 'at which place', 'how', 'with what', 'how many', 'which X', and 'whose X' have exactly the same morphological effects as object-relative clauses and object *wh*-questions with 'who'.

(33) *wh*-questions with 'what'

a.	má!m-á-zí#timbiz-ɛ̌	'what did he not return?'	Past Negative: SṔ-zí-...-ɛ̌
b.	má!m-á-zí#fɔ́t-í	'what has he not snatched yet?'	Incompletive: SṔ-zí-...-í
c.	má!m-ó-ø#tíndɛ́l-ê	'what have you pushed?'	Perfective: SṔ-ø-...-î

(34) *wh*-questions with 'where'

a.	ó!n-á-mo#zoz-ă	'where will he wash him?'	Future: SṔ-ø-...-ă
b.	ó!n-á-ma-mo#zoz-ê	'where did he wash him?'	Past: SṔ-ma-...-ê
c.	ó!n-á-ø-mo#zoz-î	'where has he washed him?'	Perfective: SṔ-ø-...-î

(35) Other *wh*-questions in the Future: SṔ-ø-...-ă

a.	im-ɛ́!k-á-ø-mo#fáf-ă	'(at) which place will he hit him?'
b.	nɛ́ á-mo#fáf-ă	'how will he hit him'
c.	má!m-á-mo#fáf-an-ă	'what will he hit him with?'
d.	vána vátá á-ø#fáf-ă	'how many children will he hit?'
e.	ímá ! mwána á-ø#fáf-ă	'which child will he hit?'
f.	emwána wamânjé ! á-ø#fáf-ă	'whose child will he hit?'

Bakweri has two types of 'why' questions, which have interesting morphological and syntactic properties. One type of 'why' question can be translated as 'for what reason'. As the examples in (36) and (37) below show, this element can be extracted or left in-situ. When this 'why' is extracted, as in (36), the verb shows the same morphology as object-extracted examples having other *wh*-elements or in object-relative clauses. When 'why' is left in-situ, as in (37), the verb has the same morphological properties as corresponding verbs in matrix clauses or in other cases of object *wh*-in-situ.

(36) Extracted 'why' ('for what reason') in the Future: SṔ-ø-...-ă

a.	n-imá-njomɛ á-ø-mo#fáf-ă	'why will he hit him?'

(37) In-situ 'why' ('for what reason') in the Future: -ø-...-à
a. a-ø-mo#fáf-a n-imá-njomɛ 'why will he hit him?

The second type of 'why' in Bakweri is interesting because it must occur on the left edge, but, as shown by the examples in (38) from the Future and Future Negative, it requires the verb to have non-extracted morphology.

(38) Left-edge 'why' with non-extracted morphology
a. má!ndíngát-á-ø-mo#fáf-a 'why will he hit him?' Future: -ø-...-à
b. má!ndíngát-á-zá-mo#kɔ́kíz-ɛ́ 'why won't he punish him?' Fut. Neg.: -zá`-...-á

Considering only these morphological properties, an analysis of the second type of 'why' is that it is base-generated in its surface position and does not move there (Rizzi 1997, Wasike 2007). As a result, it does not trigger the same morphological effects as when a *wh*-element moves.

5. Summary

This section summarizes the morphology of the six tenses compared in Section 3 in non-extracted, subject-extracted, and object-extracted contexts and the major similarities and differences across contexts. The morphological patterns of each context are schematically represented in the tables in (39-41).

Some morphological properties for a particular tense have two (but not three) forms in the different syntactic contexts (e.g. the tonal suffix for the Future tense is L in non-extracted contexts, but LH in both extracted contexts). In tables (39-41), the cell that is shaded with text in boldface corresponds to the variant found in one of the three contexts, while the cells that are unshaded and not in boldface correspond to the variant in the other two contexts or to forms which are invariant across the three contexts.

(39) Morphological patterns in non-extraction contexts

	SP	Tns/Neg	FV	Tone
Future	ø-	-ø-	-a	**L**
Past Negative	ø-	-zí-	**-e**	**L**
Future Negative	ø-	-zá`-	-a	H
Past	ø-	-ma-	-a	H
Incompletive	ø-	-zí-	-i	H
Perfective1	ø-	-ø-	-i	HL

(40) Morphological patterns in subject-extracted contexts

	SP	Tns/Neg	FV	Tone
Future	ø-	-ø-	-a	LH
Past Negative	ø-	-zí-	-ɛ	LH
Future Negative	ø-	-zá`-	-a	H
Past	ø-	**-`má`-**	-a	H
Incompletive	ø-	-zí-	-i	H
Perfective1	ø-	-ø-	-i	**H**

(41) Morphological patterns in object-extracted contexts

	SP	Tns/Neg	FV	Tone
Future	**H-**	-ø-	-a	LH
Past Negative	**H-**	-zí-	-ɛ	LH
Future Negative	**H-**	-zá`-	-a	H
Past	**H-**	-ma-	**-e**	**HL**
Incompletive	**H-**	-zí-	-í	H
Perfective1	**H-**	-ø-	-i	HL

The alternation that applies most consistently across the syntactic configurations is that object-extraction is always accompanied by a H subject prefix. The other alternations are more difficult to characterize.

The tonal suffix of the subject-extracted forms can be analyzed as the tonal suffix of the non-extracted form plus a final H: the Future and Past Negative tenses have L in the non-extracted cases, so L+H = LH. The tenses that take a H suffix in the non-extracted context are also H in the subject-extracted forms; this is consistent with H + H. The one context where the generalization characterizing the subject-extracted tonal patterns as the non-extracted patterns plus a final H appears not to hold is in the Perfective1 tense. In these forms, the non-extracted context has a HL pattern, but the subject-extracted forms have a level H pattern, and not the expected HLH pattern.[4]

It is more difficult to characterize the tonal suffixes in the object-extracted forms with a unified generalization. The Future (LH), Past Negative (LH), Future Negative (H), and Incompletive (H) tenses, all of which end in a final H, are identical to the subject-extracted forms. These forms could be thought of either as not changing the tonal suffix or as vacuously adding a final H, which has no tonal effect. The Past (HL) and Perfective1 (HL) forms appear to take the subject extracted melody, which in both cases is H, and add a final L.[5]

The marking of the tense/negation prefix is identical in all contexts except for the Past in subject-extracted forms, where -`*má*`-, the same tense marker used in the Perfective2, occurs.

The quality of the FV changes in the Past and Past Negative tenses, but the direction of change is different. In the Past tense, the non-extracted and subject-extracted forms both take final *-a*, but the object-extracted forms take *-e*. In the Past Negative, the non-extracted form is the unusual one, as extracted forms end in *-ɛ*, while the non-extracted forms end in *-e*.

[4] Final HLH is possible in contexts where a /H/ CV root co-occurs with a LH tonal suffix as in *emó a-ø#lǎǎ* 'the one who will eat'. There is probably more that should be said about tenses with a final HL, such as the Perfective1. Reliable data are not available concerning phrase-medial Perfective1 forms, but in other tenses with a phrase-final HL, such as the Imperative *zozâ* 'wash!', the final HL becomes a level H with no downstep of a following H when the verb is phrase-medial, as in examples like *zozá ngóló* 'wash Ngolo!'. In the final analysis, the lack of final HLH in the subject-extracted Perfective1 forms may not be a problem for the characterization of the subject-extracted tonal suffixes as the non-extracted forms plus a final H.

[5] This is roughly the informal generalization that Gensler (1980) offers, whose data in object-extracted contexts in the Past Negative, Future Negative, and Incompletive tenses are different from those we have collected.

6. Discussion

Although there are some general tendencies that cut across the different syntactic configurations, each tense has a potentially different constellation of morphological properties (tone of the subject prefix, quality of the tense/negation prefix, quality of the FV, suffix tone) under non-extraction, subject-extraction, and object extraction, which must be learned separately. Except partially with respect to tone, subject-extraction and object-extraction cannot, for the most part, be characterized as taking some basic form of the tense-aspect-mood marking in non-extracted forms and modifying it in a consistent way.

The data appear to be most consistent with a view of grammar in which the syntax manipulates morphemes devoid of phonological content and in which the Spell-Out of those morphemes is held off until all syntactic operations are completed. The rules of Spell-Out that determine the allomorphs of the subject prefix, the tense/negation prefix, the FV, and the suffix tone, need to be sensitive to whether NP movement has occurred and whether movement occurred from a subject position or an object position.

References

Gensler, Orin. (1980) *Verbal Morphotonemics of Bakweri*. MA thesis, University of California, Berkeley.

Rizzi, Luigi. (1997) The fine structure of the left periphery. In Liliane Haegeman (ed.) *Elements of Grammar*. Dordrecht: Kluwer Publishers, 281-337.

Wasike, Aggrey. (2007) *The left periphery, Wh-in-situ, and A-bar movement in Lubukusu and other Bantu Languages*. Ph.D. dissertation, Cornell University.