

**PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL MEETING OF THE
BERKELEY LINGUISTICS SOCIETY**

February 15-18, 2002

GENERAL SESSION

and

PARASESSION on FIELD LINGUISTICS

Edited by

Julie Larson & Mary Paster

**Berkeley Linguistics Society
Berkeley, CA, USA**

Leggbo Verb Inflection: A Semantic and Phonological Particle Analysis

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0. Introduction

One of the exciting aspects of working on a “field language” is that virtually everything is open to investigation. Not only can and must researchers address issues that arise simultaneously in the phonology, morphology, syntax, and semantics etc., but also the complex interrelations that sometimes exist between the different “modules” of a language. What is particularly satisfying is when phonological, grammatical, and semantic properties converge to allow one coherent, overarching statement. The present paper presents one such result concerning verb inflection in Leggbo, an Upper Cross minority language spoken by an estimated 60,000 people in Eastern Nigeria (Grimes 2000).¹ The goals of this paper are to present, first, a featural analysis of the inflectional system of oppositions which are explicitly marked on Leggbo verbs, specifically, aspect, mood, polarity and clause type; and second, an account of how this system of oppositions is realized in morphological terms. It will be seen that the inflectionally marked categories are organized in terms of a fixed hierarchy of privative features or “particles” which compete for expression within the Leggbo verb paradigm.

The paper is organized as follows. First, we present the verb inflection system of Leggbo. Then we discuss how the proposed morphological features occur in combination, focusing especially on cases where their individual spell-outs conflict. We conclude with a brief discussion of the implications of our findings.

1. Verb inflection system of Leggbo: the components

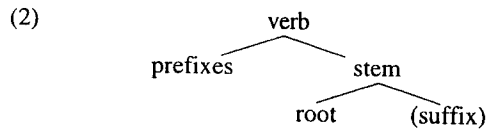
A most striking first fact about Leggbo is that it does not distinguish tense. Thus, the sentence in (1a) is underspecified as to present vs. past time reference:

¹Leggbo, which is spoken by the Agbo people in two local government areas, recently named Abi and Yakurr, in Cross-River State, is the language being investigated in our field methods course (Linguistics 240ab) this year—which we hope will result in a published grammar of the language. We are grateful for the contributions of the other full- and part-time members of the class (Jeff Good, Ahmadu Kawu, Julie Larson, Ian Maddieson, Keith Sanders, and Tess Wood). We would like especially to thank the Wenner-Gren Foundation for Anthropological Research (for travel support to Imelda Udoh in March 2001), the Committee on Research, George Breslauer, Dean of Social Sciences at UC Berkeley, and the African Studies Center for providing support for Dr. Udoh to be at Berkeley for the year. Finally, Drs. Narrog and Udoh wish to thank Hokkaido University and the University of Uyo, respectively, for granting their sabbatical leaves to be in Berkeley.

- (1) a. ba zee icéji 'they see/saw Icheji'
 3pl see Icheji
 b. ba zee icéji lEgbàl amma 'they see Icheji now'
 3pl see Icheji time this
 c. ba zee icéji lEgbàl ámmE 'they saw Icheji then'
 3pl see Icheji time that

As seen in (1b) and (1c), the time reference can be made explicit by the addition of the appropriate present or past time adverbial.

While tense is not marked on the verb, the inflectional features which do receive an overt expression belong to the categories Aspect, Mood, Polarity and Clause Type. For the purpose of this talk, we assume the simplified verb structure in (2).



The verbal unit consists of a stem preceded by one or more prefixes, including a subject agreement marker². The stem in turn consists of a root and possible suffix. Recognizing the constituencies in (2), we now can indicate, as a first approximation, how aspect, mood, polarity and clause type are inflected on the Leggbo verb (3):

(3) Inflectional features (“particles”) marked on verbs [first approximation]

			Segmental Marking		Tonal Marking	
			Prefix	Suffix	Prefix	Stem
Aspect	Progressive	P		-i	m	H-m
	Habitual	H	nà-		m	L-l
Mood	Irrealis	I			h	L-l
Polarity	Negation	N	aà-		l	H-m
Clause	Consecutive	C			l	L-l

The letters P-H-I-N-C stand for privative features (particles) which are either present or absent in the underlying representation of inflected verbs. Particles are spelled out segmentally or tonally. A tonal exponent may be assigned to a prefix (e.g. the subject marker) or to the stem. In the last two columns of (3), the alternating H/L root tone is in upper case, while prefix and suffix tones are indicated in lower case.³

The elements P, H, I, N, and C may occur alone on a verb or may occur in combination with each other. In the latter case, when the morphological spell-outs of two or more of these elements conflict, the surface form of the verb will be determined by the feature whose spell-out is ranked highest. In addition, as we have already seen in (1), a verb may completely lack any of these features, in which case a default perfective is obtained, which may have either present or past meaning.

²As in many Niger-Congo languages, the one verb form not requiring a prefix is the singular affirmative imperative, which also serves as the base entry of verbs in our lexicon, e.g. *zee* ‘see!’.

³In cited forms, an acute accent (´) marks H(igh) tone, a grave accent (`) marks L(ow) tone, and a vowel lacking an accent carries M(id) tone. For more on Leggbo tone, see Paster (2002).

Additional examples are given in (4).

- (4) Ø-marked verb (perfective): non-habitual, non-progressive, realis, affirmative
- a. activity verbs = past
- | | | | | | | |
|-----|--------|-----------------|-----|-----|--------|-----------------|
| ba | móṣṣṣ | 'they returned' | ba | dzi | lídzil | 'they ate food' |
| 3pl | return | | 3pl | eat | food | |
- b. stative verbs = present/past
- | | | | | | | |
|-----|-------|--------------------|-----|-------|--------|--------------|
| ba | nná | 'they shine/shone' | ba | dzele | icéji | 'they know/ |
| 3pl | shine | | 3pl | know | Icheji | knew Icheji' |

Activity verbs (4a) *móṣṣṣ* 'return' and *dzi* 'eat' have past meaning, while stative verbs (4b) *nná* 'shine' and *dzele* 'know' can have present or past interpretations. Thus, the Ø-form has a perfective meaning, presenting events as a whole. In our account it is the unmarked form characterized by absence of aspect-mood-polarity features: it is non-progressive, non-habitual, realis, affirmative, and main clause.

Activities which are not completed, that is, which are ongoing at the time of the speech event, have to be marked as "progressive." As seen in (5a), which involves the activity verb *dzi* 'eat', the progressive form is completely neutral between present and past interpretations, which can be disambiguated by adding the appropriate present or past time adverbial, as in (5b,c).

- (5) Progressive (P) marked by *-i* suffix (on the activity verb *dzi* 'eat')⁴
- a. ba dzi-i lídzil 'they are/were eating food'
- | | | | | | |
|-----|-------|------|--|--|--|
| 3pl | eat-P | food | | | |
|-----|-------|------|--|--|--|
- b. ba dzi-i lídzil legbàl amma 'they are eating food now'
- | | | | | | |
|-----|-------|------|------|------|--|
| 3pl | eat-P | food | time | this | |
|-----|-------|------|------|------|--|
- c. ba dzi-i lídzil legbàl ámmè 'they were eating food then'
- | | | | | | |
|-----|-------|------|------|------|--|
| 3pl | eat-P | food | time | that | |
|-----|-------|------|------|------|--|

The examples in (6) show that the progressive of stative verbs such as *kkù* 'stay' is also neutral between present and past meaning:

- (6) Progressive (P) marked by *-i* suffix (on the stative verb *kkù* 'stay')
- a. ba kkú-i míme 'they are/were staying here'
- | | | | | | |
|-----|--------|------|--|--|--|
| 3pl | stay-P | here | | | |
|-----|--------|------|--|--|--|
- b. ba kkú-i míme legbàl amma 'they are staying here now'
- | | | | | | |
|-----|--------|------|------|------|--|
| 3pl | stay-P | food | time | this | |
|-----|--------|------|------|------|--|
- c. ba kkú-i míme legbàl ámmè 'they were staying here then'
- | | | | | | |
|-----|--------|------|------|------|--|
| 3pl | stay-P | food | time | that | |
|-----|--------|------|------|------|--|

Another aspectual feature, habitual, marked by a *na* prefix, denotes an event

⁴While all progressive verb forms involve an *-i* suffix, there are two potential complications. First, most verbs also undergo fortition of one or both consonants, e.g. *móṣṣṣ* 'return' → *móṣṣṣ-i* 'be returning'. Other verbs use *-azi*, which does not condition fortition, e.g. *kum* 'pierce' → *kum-azi* 'be piercing'. In other cases, *-i* (+fortition) or *-azi* may indicate pluractionality.

occurring regularly or an activity being performed habitually. As indicated in (7a), the habitual shares with the progressive the property of not carrying any implications in regard to temporal reference. As before, (7b,c) show that temporal reference can be disambiguated by means of time adverbials:

- (7) Habitual (H) marked by *nà* prefix
- | | | | | | | | | |
|----|-----|--------|--------|------|---------|--------|------|--------------------------------------|
| a. | ba | nà-dzi | lídzil | ń-ke | etekpan | | | 'they eat/used to eat food outside' |
| | 3pl | H-eat | food | | outside | | | |
| b. | ba | nà-dzi | lídzil | ń-ke | etekpan | legbàl | amma | 'they now eat food outside' |
| | 3pl | H-eat | food | | outside | time | this | |
| c. | ba | nà-dzi | lídzil | ń-ke | etekpan | legbàl | ámme | 'they then used to eat food outside' |
| | 3pl | H-eat | food | | outside | time | that | |

The same aspectual distinctions are found in the negative. As seen in (8), negation not only involves the prefix *aà*, but also the use of a 3pl subject pronoun *bè*, different from its affirmative counterpart, *ba*:⁵

- (8) Negative (N) marked by *aà* prefix
- | | | | | | | | | |
|----|-----|----------|------|--|--|--|--|------------------------------------|
| a. | bè | aà-nná | | | | | | 'they do/did not shine' |
| | 3pl | N-shine | | | | | | |
| b. | bè | aà-kkú-i | níme | | | | | 'they aren't/weren't staying here' |
| | 3pl | N-stay-P | here | | | | | |

In addition, the examples in (9) show that the object precedes a negative verb:

- (9) SOV word order in the negative
- | | | | | | | | | |
|----|-----|--------|------------|------|---------|--|--|--|
| a. | bè | icéji | aà-dzele | | | | | 'they don't/didn't know Icheji' |
| | 3pl | Icheji | N-know | | | | | |
| b. | bè | lídzil | aà-dzi-i | | | | | 'they aren't/weren't eating food' |
| | 3pl | food | N-eat-P | | | | | |
| c. | bè | lídzil | dzè aà-dzi | ń-ke | etekpan | | | 'they don't eat/didn't use to eat outside' |
| | 3pl | food | H N-eat | | outside | | | |

The one complication in (9c) concerns the additional verbal auxiliary *dzè*, which derives from the homophonous verb *dzè*, meaning 'to finish'.

Finally, continuing our demonstration that Leggbo lacks tense, note that what we call the irrealis mood in (10), marked by the high tone on the subject agreement marker *bá* (vs. mid tone *ba* in the realis), can have either a future or conditional meaning, as in (10a), or a subjunctive function, as in (10b).

- (10) Irrealis (I) marked by H tone on subject agreement marker *bá*
- | | | | | | | | | |
|----|-----------|-----|--------|--|--|--|--|---|
| a. | <u>bá</u> | dzi | lídzil | | | | | 'they will/would eat food' (cf. <u>ba</u> dzi 'they ate') |
| | 3pl-I | eat | food | | | | | |

⁵The affirmative subject markers are *m* '1sg', *a* '2sg', *ε* '3sg', *me* '1 pl.' and *bá* '2pl/3pl'. The four subject prefixes are identical in the negative, where, however, *bô* '2pl' and *bè* '3pl' are distinguished, both distinct from *ba*.

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- b. m-vóŋi bɛ ta bá dzi lídzil 'I want them to eat food'
 1sg-want 3pl comp 3pl-I eat food (I want them that they eat food)

On the other hand, a L tone subject prefix is used on consecutive or serialized verbs:

- (11) Consecutive (C) marked by L tone on subject agreement marker *bà*

ba númi ɛ bà nii bɛ́ɛ 'we gave it to children' (lit. we
 they take it they-C give children took it & gave to children')

As we shall discuss below, tone is implicated in the realization of all of the marked inflectional features except the progressive aspect. Before moving on to tone, however, let us summarize and elaborate on the segmental properties seen thus far.

2. Segmental marking

As shown in (12a), most lexical verb stem entries consist of one or two syllables:

- (12) Verb-stem shapes in Leggbo

- a. most verb stem entries

CV : dzi 'eat', nnà 'shine', zu 'exist', kkù 'stay'
 CVV : zee 'see', zai 'wash', vyàì 'wash and squeeze', dua 'hide'
 CVCV : fina 'touch', zumi 'extinguish', dzele 'know'
 CVVCV : mǒǒŋɔ 'return', vèèli 'lend', taali 'draw a line'

- b. mostly derived verb stems (pluractional or reduplicated CV)

CVCVCV : fin-azi 'touch-pl', zum-azi 'extinguish-pl', fi-fina
 'really touch', zu-zumi 'really extinguish'
 CVVCVCV : mǒǒŋɔzi 'return-pl'
 CVCVVCV : mǒ-mǒŋɔ 'really return'

- c. with reduplicated CV + -azi

CVCVCVCV : fi-fin-azi 'really touch-pl', zu-zum-azi 'really
 extinguish', mǒ-mǒŋɔ-zi 'really return-pl'

As exemplified in (12b), most longer verbs either contain the progressive/pluractional suffix *-azi* or have reduplication of their first syllable (with "intensive" meaning). The maximum number of syllables possible in a verb stem is, thus, four, as in (12c).

Considering just CVCV verbs, V-V combinations are distributed as in (13):

- (13) V1-V2 distribution in 147 CVCV verbs (out of 356 verbs in current lexicon)

V1/V2	i	e	ɛ	u	o	ɔ	a	Totals:
i	3	0	0	0	0	0	12	15
e	7	9	0	0	0	0	0	16
ɛ	2	0	13	0	0	0	0	15
u	7	0	0	0	0	0	13	20
o	1	0	0	0	6	0	0	7
ɔ	5	0	0	0	0	27	0	32
a	15	0	0	0	0	0	27	42
Totals:	40	9	13	0	6	27	52	147

As proposed in (13), these verbs consist of a CVC (or CVVC) root plus a suffix, either /-i/ in (14a), which can occur after all V1 vowels, or /-a/ which assimilates to a preceding mid vowel, as in (14b).⁶

(14) Analysis of CVCV verbs as /CVC-i/ and /CVC-a/ (including CVVCV)

- a. /CVC-i/ : V1 can be any vowel
 b. /CVC-a/ : /CiC-a/, /CuC-a/, /CaC-a/ (no change)
 /CeC-a/ ∅ CeC-e /CoC-a/ ∅ CoC-o
 /CɛC-a/ ∅ CɛC-ɛ /CɔC-a/ ∅ CɔC-ɔ

The underlying V2 /-i/ and /-a/ are thus frozen lexical suffixes found only on some verbs. As schematized in (15a), the progressive /-i/ overrides the lexical suffix /-a/:

(15) Progressive /-i/ overrides lexical /-a/

- a. fin-a + P ∅ finn-i 'be touching'
 mɔ̀dɔ̀ŋ-ɔ + P ∅ mɔ̀ŋŋ-i 'be returning'
 b. bin-i + P ∅ bin-azi 'be carrying'
 vil-i + P ∅ vil-azi 'be cutting'

As also seen, consonant fortition, here written as double, frequently accompanies the progressive suffix -i. (In addition, a preceding long vowel will be shortened before a fortis consonant.) Approximately 1/4 of Leggbo verbs, including those indicated in (15b), instead use the underlying suffix /-azi/ without fortition.⁷ In many cases the same verb may undergo (15a) in the progressive, but (15b) to express pluractionality, or (15a) or (15b) may be ambiguous between progressive and pluractional meaning.

By contrast with the progressive, which modifies the stem in the two ways indicated in (16), the segmental marking of the habitual is as a prefix, which fuses with the subject marker as indicated in the table in (17).

(16) Habitual marking of bila 'climb'

Person	Habitual form	cf. ∅-form
1sg	nim-bila	m bila
2sg	naà-bila	a bila
3sg	neè-bila	e bila
1pl	ma nè-bila	me bila
2pl	ba nà-bila	ba bila
3pl	ba nà-bila	ba bila

The negative, in its simplest form, is also marked by adding a prefix, *aà*, which fuses with a slightly different set of subject markers, as in the second column in (16).

⁶Given difficulties of analysis, we have omitted verbs from the table whose intervocalic consonant is a weakly articulated velar approximant "gh" or "ghost-h".

⁷The vast majority of these either end in -i or already have a fortis consonant, suggesting that -azi is used to make the progressive more different from the corresponding non-progressive forms.

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(17) Negative Ø (perfective) of bila ‘climb’

Person	Negative form	Negative Habitual
1sg	mm-bila	... (dzɛ̃)... mm-bila
2sg	aà-bila	... (dzɛ̃)... aà-bila
3sg	eè-bila	... (dzɛ̃)... eè-bila
1pl	mɛ̃ eè-bila	...(dzɛ̃)... mɛ̃ eè-bila
2pl	bɔ̃ aà-bila	...(dzɛ̃)... bɔ̃ aà-bila
3pl	bɛ̃ aà-bila	...(dzɛ̃)... bɛ̃ aà-bila

The third column shows the extra marker *dzɛ̃* in the negative habitual.

3. Tonal marking

With the segmental marking now established, we now turn to the question of tone. As seen in (18a), Leggbo has three surface tones: H(igh), M(id), and L(ow), which contrast on noun roots:

- (18) a. Noun roots, which usually take a prefix, exhibit a three-way contrast
- | | | | | | |
|-----|----------|--------|-----|----------|--------------|
| L-L | : lè-kòl | ‘neck’ | M-L | : le-dùl | ‘bundle’ |
| L-M | : lè-tol | ‘head’ | M-M | : li-bul | ‘bow, arrow’ |
| L-H | : li-tól | ‘ear’ | M-H | : li-kól | ‘mat’ |
- b. Verb roots show only a two-way opposition

“M-tone verbs”		“L-tone verbs”	
dzi	‘eat’	sì	‘make, do’
tÁm	‘send’	nùm	‘take’
mana	‘catch, hold’	fina	‘touch’
beeli	‘escort’	mɔ̃ɔ̃ɔ̃	‘return’

As seen in (18b), there is only a two-way distinction among verbs with respect to tone. We term the two classes “M-toned verbs” and “L-toned verbs”, with the tone label referring to the underlying tone of the root. Important for our study, the inflectional particles under examination here may contribute a tone that associates to the prefix, root, suffix, or a combination of these. Throughout the verbal paradigm, M-toned verbs surface with M on the root almost without exception, as illustrated in (19a). L-tone verb roots, however, alternate between L and H, as shown in (19b).

- (19) a. M root tone is stable
- | | | | |
|----------|---------------|----------|----------------|
| m̃ana | ‘catch!’ | f̃ina | ‘touch!’ |
| ba m̃ana | ‘they caught’ | ba f̃ina | ‘they touched’ |
- b. L root tone alternates with H

Therefore, since their root tone alternates, L-toned verbs better exemplify the full effect of the grammatical tone assignments operating in different parts of the inflectional paradigm.

The table in (20) shows the prefix and stem tones of each inflectional category.

(20) Tonal marking of inflectional features on subject prefix and verb stem

	Prefix tone	Stem tone
Ø/P	m	H-m
H	m-l	L-l
I	h	L-l
N	(l) - ml	H-m
C	l	L-l

We begin with the prefix tone, illustrated (21).

(21) Examples of tonal realizations

	prefix	M root / L root
Ø	ba	mana / fīna
P	ba	mann-i / fīnn-i
H	ba nà-	manà / fīnà
I	bá	manà / fīnà
N	(bĕ) aà-	mana / fīna
C	bà	manà / fīnà

We take the M tone of the subject prefix *ba* to be unmarked in the Ø, progressive, and habitual forms. We also consider the first part of the negative marker *aà* to carry this M tone. As seen in (22a), we analyze the irrealis as assigning a H morphological tone—or particle—to the subject prefix:

(22) H and L subject prefixes

- a. Irrealis H subject prefix : [H]_I + ba Øbá
 b. Consecutive L subject prefix: [L]_C + ba Øbà

Similarly, in (22b), the consecutive assigns L morphological tone to the subject prefix. When a clause is both irrealis and consecutive, the effect is cumulative (23):

(23) Consecutive (C) marked by L(ow) tone on subject agreement marker *bà*

- a. consecutive realis (L assigned to subject)

Ø = [M] L
 ba númi ε bà nìi bĕĕ 'we gave it to children'
 they take it they-C give children

- b. consecutive irrealis (L and H assigned to subject)

H H+L = [M]
 bá nùm ε bà nìi bĕĕ 'we will give it to children'
 they-I take it they-I-C give children

In the realis in (23a), repeated from (11), no tone is assigned to the first *ba*, which is therefore realized as default M, but a L particle is assigned to the second *bà*. In (24b), the first *bá* receives the irrealis H tone, while the second *ba* receives both the

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irrealis H and the consecutive L features. The result is a fusion, whereby H+L is realized M, as indicated. On the basis of the subject prefix tone, we arrive at the partial hierarchy in (24):⁸

(24) Hierarchy for subject tone assignment

C, I >> H, P, Ø

What this means is that the consecutive L and the irrealis H will override Habitual, Progressive, and Ø, all three of which have unmarked subject tone.

We now consider stem tones, which are summarized in (25).

(25) Stem tones by aspect-mood-polarity-clause

	MCA	SRA	CCA	NEG
Ø/P	H-m	L-m	L-l	H-m
H	L-l	L-l	L-l	H-m
I	L-l	L-l	L-l	L-l
IH	L-l	L-l	L-l	L-l
Imperative		L-m	L-l	

MCA = main clause affirmative (non-subject relative clause = same as MCA)

SRA = subject relative clause affirmative

CCA = consecutive clause affirmative

NEG = all negatives (MCA, SRA, CCA etc.)

Recall that M verbs do not change their root tone, while the tone of L verb roots alternates with H. This is what is shown in upper case in (25)—followed by one of two suffix tones, low or mid (in lower case). We note the following generalizations:

- (26) a. L-l in both the Irrealis and Consecutive, across the board, as shaded in
- b. H-M in the Negative in the absence of I
- c. L-l in the Habitual, in the absence of Negative
- d. H-m in MCA in the absence of H or I
- e. L-m in the SRA and Imperative in the absence of H or I

Restated in terms of a hierarchy of tonal assignments, we get the following in (27).

(27) C, I >> N >> H >> MCA, SRA/Imper (= Ø, P)

The above hierarchy is crucially established by the double outlined boxes in (25). As shown in (28), the Irrealis L-l pattern overrides the Negative H-m pattern, but the Negative H-m pattern overrides the Habitual L-l pattern.

(28) Irrealis >> Negative >> Habitual
 L-l H-m L-l

As indicated in (29), the Habitual L-l pattern, in turn, overrides the H-m of the main

⁸ The negative subject prefix has peculiarities of its own and will not concern us at this point.

clause affirmative and the L-m of the subject relative affirmative and imperative:

- (29) Habitual >> MCA, SRA/Imper
 L-l H-m L-m

When we combine (28) and (29) and bring in the consecutive, we get the hierarchy in (27). Since both the irrealis and the consecutive have L-l on the stem, it is impossible to tell from the surface forms which wins out between these two, so we assume that, as with the prefix tones, irrealis and consecutive are unranked with respect to each other in the stem tone override system. The same unranked relation holds of the bottom two inflectional features: main clause affirmative and the combined subject relative affirmative/imperative. Because of the unnatural class that this latter constitutes, our intuition is that the imperative is the default. While this would take us too far afield, our suspicion is that the H variant of L verbs is from a prefixal H tone that has been assigned to it, as indicated in (30):

- (30) Possible origin of H root variant of L from proto *L and *H
 a. default realizations: *L > L , *H > M
 b. * H - [L > HL > H
 c. * H - [H > H > M

Our hypothesis in (30a) is that proto *L tone is realized L, while proto *H is realized M. However, as shown in (30b), when a floating H prefix, circled, preceded a L root tone, a HL falling tone was first produced, which was simplified to a H tone. On the other hand, when the root was a H tone, as in (30c), the floating H and the root H simply fused as one H, realized M. If correct, we can interpret the H/L alternation of L tone verb roots as due to the presence vs. absence of a preceding floating H tone.

4. Further complications

To summarize thus far, we have seen how the output realization of the inflectional P, H, I, N, and C particles are determined by a ranking that reflects the scope relations that hold between these elements. Before drawing our conclusion, we need to point out that we have presented the major, but not all of the possible aspectual and clause-type distinctions that can be made in Leggbo.

Let us just consider one further form, which has particular interest. We have said all along that Leggbo does not mark tense. There is one exception to this, which is the presence of an anterior past form, illustrated in (31), which is distinguished from the Ø perfective only in a main clause affirmative:

- (31) Main clause affirmative Anterior “tense” distinguished by tone
 a. ba fína ‘they have/had touched’ cf. ba fína ‘they touched’
 ba fín-azi ‘they have/had touched-pl’ (L-m)
 b. ba màná ‘they have/had caught’ cf. ba mana ‘they caught’
 ba màn-ázi ‘they have/had caught-pl’ (L-hm)

In both negatives and non-main clauses, the perfect has the same realization as the perfective. As seen in (32a), if the proximate time reference is the time of speaking, the meaning will be present perfect. However, if the time reference is already in the

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past, the result will be an anterior past, as in (32b).⁹

(32) Anterior past (to present or past time reference)

- a. ba bbǒ `da 'they have already died'
 they die-A already
- b. ba bbǒ `da bèle m̀-̀bòlò m̀-wèl 'they had already died before'
 they die-A already before I-just I-arrive I arrived'

While this may represent a small corner where tense is expressed in Leggbo, it is significant that it is relative anteriority being marked, not exact time reference. Just as in the case P, H, I, N, C, the Anterior form does not explicitly indicate when the action took place with respect to the time of speaking. In any case, this restricted form is low in the hierarchy, since it only occurs in the main clause affirmative.

A second, and last, complication we will consider concerns the perfective itself. Thus far we have implied that it is unmarked. In fact, as shown in (33a), many verbs, including all CVC roots, take an *-i* suffix in the perfective:

- (33) a. CVC : nùm 'take' → ba nùm-i 'they took'
 tól 'pull' → ba tól-i 'they pulled'
- b. CVCV : bila → ba bila 'they climbed' (cf. P ba bidd-i)
 m̀d̀d̀ŋ̀p̀ → ba m̀d̀d̀ŋ̀p̀ 'they returned' (cf. P ba m̀d̀ŋ̀ŋ̀ -i)
- c. CV : dza → ba dza-i 'they are/were good'
 nnà → ba nná 'they shine/shone'

When the verb already has a second vowel, as in (33b), the perfective does not have an *-i* suffix. Finally, when the verb has the shape CV, as in (33c), some take an *-i* suffix, while others don't. The data in (33b) suggest that in such verbs, the lexical second vowel, an *-a* suffix, overrides the spell-out of the Ø feature we have called perfective. This contrasts with the progressive *-i* which, as shown in parentheses, replaces the second vowel of CVCV verbs. We note that the gerund suffix *-ê* has the same distributional property as perfective *-i*, but we leave this to further study.

4. Conclusion

In the preceding sections we have presented an analysis of the underlying features of the aspect-mood-polarity system of Leggbo as well as their morphological and phonological realizations. We have seen that the posited inflectional particles are ranked in one of two hierarchies in (34):

- (34) a. Tonal properties
 C, I >> N >> H >> P, Ø

⁹The tone pattern is also unique: *bbó* 'die' is a M verb. When we add the */-azi/* pluractional suffix, we obtain *bbò-ózi* 'die-pl', i.e. L-h-m. Compare this with the L verb, *fin-azi* 'touch-pl', i.e. L-m. We know the initial L is from a floating L- prefix, but we cannot at present explain the H.

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- b. Segmental properties
P >> Ø

The hierarchy in (34a) determines morphological tone assignment, while the hierarchy in (34b) is responsible for segmental overwriting in the progressive. The significance of these findings is as follows: Much of the work concerning complex inflectional morphology addresses issues of concatenation. Whether citing Bybee's (1985) semantic notion of relevance or Baker's (1985) syntactic mirror principle, it is easy to cite examples where linear ordering of concatenated affixes reproduces inherent scope relations. Basically, outer affixes have scope over inner affixes.

On the other hand, but still dealing with concatenative morphology, Anderson (1986) has been concerned with cases where more than one affix vies for the same "slot." In this case it has to be determined which affix wins out. Anderson's proposal is to establish "disjunctive rule blocks", but the same kind of hierarchy that we have proposed in (34a) will essentially do the same trick.

What Leggbo and many other African tone languages show is that in addition to segmental affix ordering and segmental affix disjunction, non-concatenative spell-outs, especially via prosodic features such as tone, also show the same hierarchical, scope effects. While many authors show verb tone patterns in tabular displays, only some have attempted to order or rank morphological spell-outs in a systematic manner (see, for example, Hyman & Byarushengo 1984 for Haya; Hyman & Olawsky, in press, for Dagbani). This is a rich area for future comparative work on the use of tone in morphology and for typological research on the semantics and morphology of inflectional morphology in general.

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