



The segmental and tonal structure of verb inflection in Babanki

Pius W. Akumbu^a, Larry M. Hyman^b & Roland Kießling^{c*}

^aUniversity of Buea – akumbu.pius@ubuea.cm

^bUniversity of California, Berkeley – hyman@berkeley.edu

^cUniversität Hamburg – roland.kiessling@uni-hamburg.de

In this study we provide a comprehensive phonological and morphological overview of the complex tense-aspect-mood (TAM) system of Babanki, a Grassfields Bantu language of Cameroon. Our emphasis is on the competing inflectional tonal melodies that are assigned to the verb stem. These melodies are determined not only by the multiple past and future tenses, perfective vs. progressive aspect, and indicative vs. imperative, subjunctive, and conditional moods, but also affirmative vs. negative and “conjoint” (CJ) vs. “disjoint” (DJ) verbal marking, which we show to be more thoroughgoing than the better known cases in Eastern and Southern Bantu. The paper concludes with a ranking of the six assigned tonal melodies and fourteen appendices providing all of the relevant tonal paradigms.

Keywords: tonal melodies; grammatical tone; verb inflection; tonal paradigms; conjoint; disjoint

1 Introduction

The purpose of this paper is to provide a description of tense-aspect-mood marking in Babanki, a Grassfields Bantu language of the Ring subgroup spoken in Western Cameroon (Hyman 1980; Akumbu & Chibaka 2012). Similar to related Grassfields Bantu languages, we will show that Babanki distinguishes multiple past and future tenses as well as a progressive/non-progressive aspect distinction. Particularly striking is the discovery of a thoroughgoing conjoint-disjoint contrast similar to, but more pervasive than, the CJ/DJ distinctions which have been extensively documented in Narrow Bantu (see the papers in van der Wal & Hyman 2017 and references cited therein). The various tense aspect markers (TAMs) are expressed through an extensive system of multiple exponence, which may involve pre- and/or post-verbal particles, prefixes and suffixes, and tone. In the following sections we will first present preliminary aspects of Babanki morphology and tonology (§2), then describe the seven indicative tenses as they appear in the perfective (§3), the progressive (§4), and their corresponding negatives (§5). We then turn to the imperative, subjunctive, and conditional moods, first presenting their affirmative forms (§6), then the corresponding negative forms (§7). In our conclusion (§8) we present an analysis integrating all of the relevant morpho-syntactic features seen to determine the tonal patterns in the preceding sections.

* The first author acknowledges the Fulbright Scholar Program for a Fulbright African Research Scholar Grant to the University of California Berkeley (2015-2016) and the Alexander von Humboldt Foundation for a Georg Forster Research Fellowship for Experienced Researchers (2019-2020) which have allowed for greater progress and the present collaboration. Special thanks to two other Kejom Ketinguh speakers: Regina Phubong and Vivian Ba-ah who contributed some of the data, and to Gene Buckley and two anonymous reviewers for helpful comments on the original submission.

2 Preliminaries

As indicated, Babanki is a member of the Ring subgroup of Grassfields Bantu, with close relatives such as Kom, Bum and Men in Central Ring, Aghem and Isu in Western Ring, and Lamnso and Babungo in Eastern Ring, among others. Previous work on Babanki includes studies by Hyman (1979a, 1980), Mutaka and Chie (2006), Akumbu (2011, 2015, 2016), Akumbu & Chibaka (2012) and Chie (2014). Much of this work has centered around the morphology and tone of elements within the noun phrase, as Babanki has a full Bantoid-like noun class system. However, comparative lexical work has included verbs and especially the study of the verb extension system (Akumbu 2015; Hyman 2018). Only recently have we begun to look systematically at the verb inflection system, which we report on here. The current materials were compiled by the first author, a native speaker of Kejom Ketinguh (Babanki Tungo) dialect, which differs from the Kejom Keku (Big Babanki) dialect in only minor ways.¹ In order to facilitate the discussion of the tense-aspect system, a few preliminaries are in order.

First, since we will present sentences with both a subject and an object, it is important to note that Babanki is an SVO language, where the object, whether nominal or pronominal, follows the verb. Second, as seen in the following table, there is a subject-verb agreement marker (SM) which differs from subject pronouns (Pro) and is most visible in classes which have a Cə shape, since the schwa that marks other classes may completely fuse with a neighboring vowel.²

Table 1: Babanki subject pronouns and concords

class	Pro	SM	class	Pro	SM
1	ɣə	Ø	7	kə	kə
2	və	ə	8	və	ə
3	ghə	ə	9	zə	Ø
5	zə	ə	10	sə	sə
6	ghə	ə	13	tə	tə
6a	mə	Ø	19	fə	fə

An overt class 19 subject concord marker (SM) *fə* is seen in the following example, agreeing with *fənyín* ‘bird’:

- (1) *fə-nyín fə n-lám lí kə-báyn* ‘A bird cooked fufu.’
 19-bird 19.PFV.P3 N-cook P3 7-fufu

As will be further discussed when we consider the different TAMs, in the above disjoint (DJ) form, the distant past (P3) is marked by a schwa which fuses with *fə*, as well as by the prefix *n-* and the post-verbal particle *lí*. As we will see, a perfective morpheme /ə/ also occurs between the SM and the verb, but fuses with *fə* as well. In other tenses preverbal particles can have the shape CV, e.g. general past (P2) /tə/. While (1) clearly shows a SM, we will generally cite sentences where the subject is the name *búŋ* ‘Bung’ belonging to class 1, which does not have a SM.

¹ Only a few lexical items are different in the two dialects (examples to the left are from Kejom Keku while those to the right are from Kejom Ketinguh): *fəmváŋ* vs. *túbù* ‘jigger’; *kəbwín* vs. *jì* ‘road’; *wúŋ* vs. *fəlàŋ* ‘fishing net’. There are also a few sound differences: *kəbòŋə* vs. *kəbòlə* ‘calabash’; *kəbwə* vs. *kəbyə* ‘half’; *wàn* vs. *wəyn* ‘child’; *kəŋshif* vs. *kəŋfyif* ‘blindness’.

² We have indicated the standard Bantu numbering since the noun classes that exist in Babanki correspond to those reconstructed in Proto-Bantu (Meeussen 1967). In transcribing Babanki forms, we recognize 26 consonants [b, t, d, k, g, ʔ, m, n, ny, ŋ, f, v, s, z, sh, zh, gh, pf, bv, ts, dz, ch, j, l, w, and y] and 8 vowels [i, i, u, u, e, o, ə, a]. Vowel length is not underlyingly contrastive in Babanki. We follow IPA transcription except that [ʃ, ʒ, ɲ, ʝ, j] are transcribed [sh, zh, ny, gh y], respectively, and [ɹ] represents IPA [w].

Turning to the structure of the verb, the verb root may have the shape CV or CVC, while the verb stem can be CV, CVC, CVCV, or CVCCV. The bisyllabic stem forms derive diachronically from a root + suffix, which may be either identifiable as a “verb extension” (e.g. causative, pluractional), or can be lexically frozen on the root. In Table 2, the verbs cited in our study are presented in their root, stem, infinitive, and imperative forms.

Table 2: Babanki verbs cited in this study

root tone	root	stem	infinitive	imperative	gloss	stem shape
H	zhí	zhí	á- [↓] zhí	zhí	‘eat’	CV
H	lám	lám	á- [↓] lám	lám	‘cook’	CVC
H	shí	shítá	á- [↓] shítá	shítá	‘collect’	CVCV
H	sáj	sájta	á- [↓] sájta	sájta	‘sift’	CVCCV
L	lè	lè	á-lè	lèé	‘lose’	CV
L	kùm	kùm	á-kùm	kùmá	‘touch’	CVC
L	shì	shisè	á-shisè	shisá	‘remove’	CVCV
L	lìm	lìmsè	á-lìmsè	lìmsá	‘heat’	CVCCV

As seen, verb roots contrast high (H) and low (L) tone, marked with an acute (´) vs. grave (`) accent. Suffixes are underlyingly toneless and take the same tone as the root unless a conflicting suffix tone is assigned by a specific TAM. In the examples *sájta* ‘sift’ has the pluractional suffix *-ta* (cf. *sáj* ‘sift’) while *lìmsè* ‘heat’ has the causative suffix *-sè* (cf. *lìm* ‘be hot’). Analyzing these (and more complex) forms requires further discussion of the tone system. The underlying /H/ and /L/ are subject to various tone rules which produce additional surface contrasts. The infinitive prefix *á-* in Table 2 causes a H tone root to be downstepped, marked by the down arrow ([↓]). We attribute this to a floating L which follows the schwa, i.e. /á ʷ/, and which also prevents the H of the prefix from spreading onto a L verb root. In addition, there is a third, derived surface-contrastive mid (M) pitch height, marked by a macron (ˉ). Falling HL (ˆ) and rising LH (ˆ) tones also occur, but are much more restricted. In the data to be presented they only occur on preverbal TAM particles and not on the verb stem itself.³ M tones derive from two sources (cf. Hyman 1979; Akumbu 2019), illustrated in the following examples involving the H and L tone verb roots /lám/ ‘cook’ and /kùm/ ‘touch’:

- (2) a. lám kə́báyn ‘cook fufu!’ (imperative)
 b. kùmá kə́báyn ‘touch fufu!’
- (3) a. Búŋ t̄è lám kə́báyn ‘Bung cooked fufu.’ (P2 conjoint)
 b. Búŋ t̄è kùm kə́báyn ‘Bung touched fufu.’

In (2) we see that a noun class prefix, here /kə́-/, raises to M between two H tones, the first of which is a H suffix on the verb (see below). As was also seen in Table 2, the L tone verb in (2b) has acquired an epenthetic schwa to avoid the rising tone that would otherwise result from combining the root L with the H suffix tone of the imperative (**kũm*). Such register raising of L to M occurs only in TAMs which assign a H suffix to the verb.

The second source seen in (3a) owes its existence to a rule of L tone spreading (LTS), here applying from the P2 TAM marker /t̄è/ onto the H verb root /lám/ ‘cook’. Since the language does not tolerate rising tones on lexical morphemes, the result in this case is to shift the H onto the prefix, producing an intermediate HL falling tone (*lám kə́báyn*). The resulting L-HL-H sequence is then converted to L-M-H (cf. Hyman

³ The only time a verb can have a HL tone is when it occurs clause-finally in certain non-indicative moods such as the hortative, e.g. *yúwù kùm* ‘let’s touch!’ (see §6). Contour tones are also rare on nouns, occurring only on the first stem syllable, mostly limited to borrowings, lexicalized compounds, and reduplications, e.g. *lám* ‘lamp’, *só* ‘saw’, *ànkúnyàm* ‘pig’, *búbù* ‘deaf (mute) person’, *fə́ndzə́nzò* ‘bird (sp.)’.

1979; Akumbu 2019). Although beyond the scope of this paper, whether LTS will apply onto a monosyllabic verb depends on what follows it:

(4) a. *LTS applies*

with object:	Búŋ t̀ làm k̀báyŋ	‘Bung cooked the fufu.’
	Búŋ t̀ làm k̀t̀t̀?	‘Bung cooked the snail.’
adverbial:	Búŋ t̀ làm nántô	‘Bung cooked too much.’
preposition:	Búŋ t̀ làm nè mbàs̀	‘Bung cooked with soup.’
WH-question:	Búŋ t̀ làm gh̀	‘What did Bung eat?’

b. *LTS doesn’t apply*

Multiverb:	Búŋ t̀ lám è mè	‘Bung finished cooking/cooked completely.’
Y-N question:	Búŋ t̀ lám à	‘Did Bung cook?’
Final position:	Búŋ á t̀ lám	‘Bung cooked.’

As seen in (4a), it is only a L-H noun which becomes M-H. In other cases the H of the verb /lám/ is lost – although /gh̀/ ‘what’ has acquired the H (cf. *Búŋ t̀ k̀m gh̀* ‘what did Bung touch?’). In (4b) LTS does not apply when followed either by a consecutivized verb (‘cook & finish’) or the yes-no question marker /à/. The last example shows that LTS also will not apply if the monosyllabic verb is final. Since the conjoint verb form cannot occur finally in a main clause affirmative (MCA), the corresponding disjoint form is cited (where the L tone P2 marker /t̀/ becomes HL [t̀] by H tone spreading from the preceding DJ marker /á/ – see discussion in §3). Finally, it should be noted that a bisyllabic H-H verb undergoes LTS independent of what follows, hence finally: *Búŋ á t̀ s̀nt̀* ‘Bung sifted’.

In the following discussion we will almost exclusively cite forms where the verb is followed by the object noun *k̀báyŋ* ‘fufu’ (a staple food) so that we can see whether the process of LTS occurs. In the following sections we first analyze the indicative tense-aspect contrasts starting with perfective (§3), then progressive (§4), and negative (§5), and then turn to non-indicative forms in (§6, §7). We end in §8 by outlining an analysis which ranks the TAM inflectional features seen to determine the different tonal patterns in the earlier sections.

3 Perfective forms

In this section we will introduce the temporal contrasts and describe their realization in the perfective aspect. As summarized in Table 3, Babanki distinguishes four present/past and three future tenses, which we refer to as P0–P3 and F1–F3. We indicate the pre-verbal segmental tense auxiliaries which are held constant across the perfective and progressive aspects as well as in the corresponding negatives. (F2 *nè* and F3 *lù* are also consistently present in non-indicative moods.)

Table 3: Babanki tense distinctions

Tense	AUX	Approximate time period
P0	̀	present, a few minutes ago
P1	yì	today
P2	t̀	yesterday to about 2 weeks ago
P3	è N-	more than 2 weeks ago
F1	à	not longer than in a few minutes
F2	nè	later today
F3	lù	from tomorrow on

As indicated, the P1, P2, F1, F2, and F3 tenses have L tone segmental auxiliaries. P0 does not have a segmental auxiliary and P3 requires a nasal prefix on the verb. Since tone is also involved, these markers

tell only part of the story. In addition, in the perfective aspect there is a distinction between conjoint (CJ) and disjoint (DJ) forms in all seven tenses. We schematize the analysis of MCA perfective tense marking in Table 4, where ... refers to the position of the verb stem. The tonal marking is intended to be underlying, e.g. P1 DJ /ə̀ yì/ and P2 DJ /ə̀ t̩/ which are however realized [ə̀ yí] and [ə̀ t̩] by H tone spreading. Examples involving all of the verbs in Table 2 can be found in Appendix 1.

Table 4: Conjoint and disjoint tense marking

Tense	Conjoint	Disjoint
P0	` ...	é ... ` lí
P1	yì ...	é yì ...
P2	t̩ ...	é t̩ ...
P3	ə̀ N ... (')	é N ... ` lí
F1	à ...	é à ... ´
F2	nè ...	é nè ... ´
F3	lù ...	é lù ... ´

Since the CJ/DJ distinction is found only in MCA perfective forms, we can refer to these directly as “conjoint” and “disjoint” or CJ and DJ. The above contrasts have all of the properties of the CJ/DJ contrast reported in Bantu, e.g. in the studies in van der Wal & Hyman (2017):⁴

- (i) The DJ is used with truth value focus, either contrastively (‘Bung DID eat the fufu’) or when the truth value is part of the assertion (i.e. not presupposed): ‘Hey, guess what? Bung ate the fufu’.
- (ii) The CJ is used when the truth value is presupposed, either in answer to a question ‘What happened?’ (answer: ‘Bung ate the fufu’) or when focus is on another element of the utterance. This can be in answer to a WH question: ‘Who ate the fufu?’, answer: ‘BUNG ate the fufu’; ‘What did Bung eat?’, answer: ‘Bung ate the FUFU’; ‘What did Bung do with the fufu?’, answer: ‘Bung ATE the fufu’. It can also be contrastive: ‘Bung ate the FUFU, not the vegetables’.
- (iii) The verb can occur at the end of a MCA sentence with DJ marking; it cannot occur at the end of a MCA sentence with CJ marking (there must be something following the verb).
- (iv) There is no CJ/DJ contrast in negatives or relative clauses (where the verb can occur last).
- (v) As we will see in subsequent sections, non-contrastive negative and relative clause marking of P (non-future) tenses looks like the CJ marking in main clause affirmatives (where one does not expect focus marking of truth value). While this is typical of CJ/DJ languages, the future tenses are different: their marking in negatives and relative clauses looks more like the DJ in main clause affirmatives.
- (vi) The DJ forms are more segmentally marked than the CJ forms. As seen in Table 4, the DJ forms all involve a H tone schwa that precedes the TAM auxiliary. P0 and P3 also have a postposed marker /lí/.

With this established, we now turn to consider the tonal patterns associated with each cell in the complex TAM system of Babanki. For this purpose we have prepared appendices of full sentences which are color-coded for tone pattern. Although we will cite a subset of these forms in the text, readers will be referred to

⁴ Although they differ in form, the Babanki CD/DJ also parallels the contrast reported in non-future tenses in Aghem, a Western Ring Grassfields Bantu language (Anderson 1979; Watters 1979), as well as in certain other non-Bantu languages (Hyman & Watters 1984). More closely related within Central Ring, Kom also has a CJ/DJ contrast, again marked by different forms, as in the general past *Ngóŋ tí jùm mēnywīn* (CJ) vs. *Ngóŋ tí mēn jùm mēnywīn* (DJ) ‘Ngong drove away the birds’ (second author, personal notes).

the relevant appendix for more examples. For ease of reference, we present an overview of indicative TA marking with color coding of the tone patterns in Table 5.

Table 5: Summary of indicative TA marking color-coded by tone pattern on the verb

	indicative aff.			indicative neg.	
	CJ	DJ	PROG	PERF	PROG
P0	`	é	`	é kó `	é kó `
P1	yì	é yî	yĩ	é kó yì	é kó yĩ
P2	tè	é tê	tǎ	é kó tè	é kó tǎ
P3	è	é	è	é kó `	é kó
F1	à	á `	á	é kó `	é kó
F2	nè	é né `	é né	é kó ↓né `	é kó ↓né
F3	lù	é lú `	é lú	é kó ↓lú `	é kó ↓lú

Since we will consider each TA separately we will identify the tone patterns as we go. In §8, a fuller paradigm with all TAM forms is provided in Table 6 and the tone patterns identified in Table 7. For now, note that five different tone patterns have been identified, with progressive aspect (PROG) always assigning the same tone pattern to the verb, colored in green.

3.1 Conjoint forms

We start with the CJ forms, since they are segmentally and tonally simpler. Representative forms of all seven CJ tenses are provided in the first data column in Appendix 1, color-coded for tone pattern. Except for the P3, all of the cells are gray, indicating that the verb is preceded by a L auxiliary indicated above in Table 4. (The P0 auxiliary is a floating L tone.) While the L tone auxiliary has no effect on L tone roots, it causes H tone roots to become L by LTS, as in the P2 forms in (5).

- (5) a. Búŋ tɛ̀ zhì kã-báyn 'Bung ate the fufu.'
 Bung P2 eat 7-fufu
 b. Búŋ tɛ̀ lám kã-báyn 'Bung cooked the fufu.'
 Bung P2 cook 7-fufu
 c. Búŋ tɛ̀ sɛ̀ŋtɛ̀ kã-báyn 'Bung sifted the fufu.'
 Bung P2 sift 7-fufu

The L of P2 /tɛ̀/ spreads and delinks the underlying root H of /zhì/ 'eat', /lám/ 'cook', and /sɛ̀ŋtɛ̀/ 'sift'.⁵ In (5a,b), where the verb stems are monosyllabic, this frees the H, which then joins the L of the following class 7 noun prefix /kã-/ to form a HL falling tone, subsequently simplified to M (*kã-* → *kã-*). In the case of bisyllabic /sɛ̀ŋtɛ̀/ in (5c), the H delinks on the first syllable, with the suffix *-tɛ̀* maintaining the (spread) H tone, i.e. /sɛ̀ŋtɛ̀/ → *sɛ̀ŋtɛ̀* → *sɛ̀ŋtɛ̀*. Since the H of bisyllabic verbs is not reassigned to the following noun, the /kã-/ noun prefix remains L, as it also is after a L tone verb.

- (6) a. Búŋ tɛ̀ lè kã-báyn 'Bung lost the fufu'
 Bung P2 lose 7-fufu
 b. Búŋ tɛ̀ kùm kã-báyn 'Bung touched the fufu'
 Bung P2 touch 7-fufu
 c. Búŋ tɛ̀ límɛ̀ kã-báyn 'Bung heated the fufu'
 Bung P2 heat 7-fufu

⁵ Recall that suffixes are toneless, taking their tone from the root. As we will see, some TAMs assign a L suffixal tone that may cause a bisyllabic H root stem to be realized H-L (as in progressive forms – see §4), while other TAMs assign a H suffix tone that may cause a bisyllabic L root stem to be realized L-H (as in the P3 CJ as well as the imperatives seen in Table 2.)

A glance at the other CJ tenses in Appendix 1 will reveal that with the exception of P3 they all share the same tone pattern. P3 is also exceptional in being the only perfective tense that requires a nasal prefix on the verb (also in the DJ). The H tone verbs undergo LTS and have the same realization as the other CJ tenses:

- (7) a. Búŋ ə n-zhì k̄ə-báyn ‘Bung ate the fufu.’
 Bung IPFV.P3 N-eat 7-fufu
 b. Búŋ ə n-làm k̄ə-báyn ‘Bung cooked the fufu.’
 Bung IPFV.P3 N-cook 7-fufu
 c. Búŋ ə n-səŋtá k̄ə-báyn ‘Bung sifted the fufu.’
 Bung IPFV.P3 N-sift 7-fufu

The L tone verbs, however, show a different pattern in P3:

- (8) a. Búŋ ə n-lèé k̄ə-báyn ‘Bung lost the fufu.’
 Bung IPFV.P3 N-lose 7-fufu
 b. Búŋ ə ŋ-kùmó k̄ə-báyn ‘Bung touched the fufu.’
 Bung IPFV.P3 N-touch 7-fufu
 c. Búŋ ə n-lìmsó k̄ə-báyn ‘Bung heated the fufu.’
 Bung IPFV.P3 N-heat 7-fufu

First, the monosyllabic verbs acquire a second H tone schwa syllable seen most clearly after the CVC root in (8b), while the schwa assimilates to the vowel of a CV root, as in (8a). The H tone -*ó* also conditions the class 7 prefix /k̄ə-/ to become M. Given that the L verbs show this different pattern, we have encoded the P3 CJ cell blue.

3.2 Disjoint forms

We are now ready to consider the corresponding DJ forms in the second data column of Appendix 1. These all involve a DJ marker /ə/ occurring between the subject and the verb (which however fuses with the /á/ auxiliary in the F1). Except for the spreading of the H of this /ə/ onto the TAM auxiliaries /yì/ and /tə/, yielding [yí] and [tə], the P1 and P2 tone patterns are the same as CJ, hence shaded grey in Appendix 1. Again we illustrate with the P2 H and L verb forms in (9) and (10), respectively.

- (9) a. Búŋ ə t̄ə zhì k̄ə-báyn ‘Bung ate the fufu.’
 Bung PFV P2 eat 7-fufu
 b. Búŋ ə t̄ə làm k̄ə-báyn ‘Bung cooked the fufu.’
 Bung PFV P2 cook 7-fufu
 c. Búŋ ə t̄ə səŋtá k̄ə-báyn ‘Bung sifted the fufu.’
 Bung PFV P2 sift 7-fufu
 (10) a. Búŋ ə t̄ə lè k̄ə-báyn ‘Bung lost the fufu.’
 Bung PFV P2 lose 7-fufu
 b. Búŋ ə t̄ə kùm k̄ə-báyn ‘Bung touched the fufu.’
 Bung PFV P2 touch 7-fufu
 c. Búŋ ə t̄ə lìmsə k̄ə-báyn ‘Bung heated the fufu.’
 Bung PFV P2 heat 7-fufu

Both P0 and P3 work differently from the CJ and are shaded orange. First, they both acquire a post-verbal auxiliary /lí/, represented by the P3 DJ forms in (11) and (12).

- (11) a. Búŋ ə n-zhí ʎlí k̄ə-báyn ‘Bung ate the fufu.’
 Bung PFV.P3 N-eat P3 7-fufu

	b.	Búŋ	é	n-lám	↓lí	kè-báyn	‘Bung cooked the fufu.’
		Bung	PFV.P3	N-cook	P3	7-fufu	
	c.	Búŋ	é	n-sóŋtá	↓lí	kè-báyn	‘Bung sifted the fufu.’
		Bung	PFV.P3	N-sift	P3	7-fufu	
(12)	a.	Búŋ	é	n-léè	lí	kè-báyn	‘Bung ate the fufu.’
		Bung	PFV.P3	N-lose	P3	7-fufu	
	b.	Búŋ	é	ŋ-kúmà	lí	kè-báyn	‘Bung touched the fufu.’
		Bung	PFV.P3	N-touch	P3	7-fufu	
	c.	Búŋ	é	n-límsè	lí	kè-báyn	‘Bung heated the fufu.’
		Bung	PFV.P3	N-heat	P3	7-fufu	

In (11) we see that the verbs are realized H followed by the downstep of ⁴lí, which we interpret as triggered by a floating L tone. In (12) the H of the DJ auxiliary /é/ spreads through the toneless nasal prefix onto the verb, creating a HL sequence. In (12a,b) an extra mora is observed which avoids the creation of a HL falling tone on the roots: *[lê], *[kúm]. Since /lí/ is preceded by a L tone, there is no contrastive downstep, although Babanki is subject to automatic downstep or “downdrift”. In the above forms and elsewhere where present, a nasal prefix is underlyingly toneless, realized M between H tones, otherwise L if preceded or followed by L.⁶ As seen in Appendix 1, the P0 DJ forms are identical to the P3 DJ except that they lack a nasal prefix.

This leaves the future DJ tenses, which have a still different tone pattern and hence are encoded yellow. As seen in Appendix 1, the H of the DJ marker /é/ spreads onto the future auxiliaries /à/, /nè/, and /lù/. Rather than creating a HL falling tone, the result is that the L of these markers is delinked. As seen in the F2 DJ forms in (13), the delinked L triggers downstep on H tone verbs.⁷

(13)	a.	Búŋ	é	né	↓zhí	kā-báyn	‘Bung will eat the fufu.’
		Bung	PFV	F2	eat	7-fufu	
	b.	Búŋ	é	né	↓lám	kā-báyn	‘Bung will cook the fufu.’
		Bung	PFV	F2	cook	7-fufu	
	c.	Búŋ	é	né	↓sóŋtá	kā-báyn	‘Bung will sift the fufu.’
		Bung	PFV	F2	sift	7-fufu	

The corresponding L tone verbs show that the future DJ forms also involve a post-verbal H which fuses with the L tone of the noun prefix /kè-/, converting it to M:

(14)	a.	Búŋ	é	né	lè	kā-báyn	‘Bung will lose the fufu.’
		Bung	PFV	F2	lose	7-fufu	
	b.	Búŋ	é	né	kùm	kā-báyn	‘Bung will touch the fufu.’
		Bung	PFV	F2	touch	7-fufu	
	c.	Búŋ	é	né	lìmsé	kā-báyn	‘Bung will heat the fufu.’
		Bung	PFV	F2	heat	7-fufu	

Although only tonal, the presence of a second post-verbal DJ marker is of course less surprising given the post-verbal DJ marker /lí/ in the P0 and P3.

This completes our discussion of the CJ and DJ perfective forms. In the following section we examine the same tenses in the progressive aspect, provided in the third data column of Appendix 1.

⁶ For discussion of the interaction of preconsonantal nasals with tone in the Babanki noun class system, see Akumbu & Hyman (2017).

⁷ Since /à/, /nè/, and /lù/ are auxiliaries, we might expect them to tolerate a HL tone, as in the P1 DJ [yí] and P2 DJ [tâ]. We speculate that the reason the L delinks is that the F2 and F3 auxiliaries are less grammaticalized and hence retain some of their original lexical root status as earlier verbs (cf. *nè* ‘do, act’, *lù* ‘rise up, get up in the morning’). They are, however, apparently not “lexical” enough to lengthen their vowel to **nèè* and **lùù*.

4 Progressive forms

The first important thing to note is that the progressive forms do not distinguish CJ from DJ. There is only one form per tense which is marked by a nasal prefix except in the P0 and a /L/ schwa suffix on the verb. In most cases the L /-ə/ suffix is realized with the same tone as the verb root:

(15)	a.	Búŋ	lám-ə	kə-báyn	‘Bung is cooking fufu.’	(P0)
		Bung	cook-PROG	7-fufu		
	b.	Búŋ tǎ	n-lám-ə	kə-báyn	‘Bung was cooking fufu.’	(P2)
		Bung P2	N-cook-PROG	7-fufu		
	c.	Búŋ ə né	n-lám-ə	kə-báyn	‘Bung was cooking fufu.’	(F2)
		Bung PFV F2	N-cook-PROG	7-fufu		
(16)	a.	Búŋ	kùm-ə	kə-báyn	‘Bung is touching fufu.’	(P0)
		Bung	touch-PROG	7-fufu		
	b.	Búŋ tǎ	ŋ-kùm-ə	kə-báyn	‘Bung was touching fufu.’	(P2)
		Bung P2	N-touch-PROG	7-fufu		
	c.	Búŋ ə né	ŋ-kùm-ə	kə-báyn	‘Bung was touching fufu.’	(F2)
		Bung PFV F2	N-touch-PROG	7-fufu		

It is however the H-L pattern of the CV(C)CV verb stems /səŋtə/ ‘sift’ and /ʃítə/ ‘collect’ that shows that the suffix must be L:

(17)	a.	Búŋ	səŋtə	kə-báyn	‘Bung is sifting fufu.’	(P0)
		Bung	sift.PROG	7-fufu		
	b.	Búŋ tǎ	n-səŋtə	kə-báyn	‘Bung was sifting fufu.’	(P2)
		Bung P2	N-sift.PROG	7-fufu		
	c.	Búŋ ə né	n-səŋtə	kə-báyn	‘Bung was sifting fufu.’	(F2)
		Bung PFV F2	N-sift.PROG	7-fufu		

We therefore propose that the H of the root spreads and delinks the L of CV-ə and CVC-ə stems, producing an all H verb stem in (15), while H tone spreading is blocked when the verb stem has a suffix such as the /-tə/ in (17). In all cases the progressive L keeps the following /kə-/ suffix L. As seen in the above forms and in the third column of data in Appendix 1, what is significant is that all progressive forms have the same tonal pattern throughout all of the tenses, which overrides the distinctions found in other columns.⁸ We have shaded this pattern green.

To summarize thus far, while the input tense markers are the same as in Table 3, the following curious fact should be noted: the PST tenses show the same segmental marking as the CJ forms in column 1, while the FUT tenses have the same /ə/ preceding the tense auxiliary as in the DJ forms in column 2. There are tonal differences, however.⁹ First, except in the P3, the PST tenses have a H tone following the tense

⁸ As will be seen in §5 and §6, the same tone pattern is also found throughout the negative progressive paradigm as well as in non-indicative moods.

⁹ The *preverbal* high tone effects in the future progressives seem to correlate with the *postverbal* high tones of the futures in the DJ paradigm. So on purely formal grounds one might come to think that actually the progressive future forms retain periphrastic traits in that the tense markers (two of which, F1 *nè* and F2 *lù*, have been identified as originating in erstwhile verbs) are inflected for the DJ (accounting for the tonal effects in the yellow cells of Appendix 1), whereas the verb itself is segmentally marked for the progressive by the marker combination *N- ... -ə*. This leaves us with the (open) question of the semantic link between both categories, i.e. the progressive paradigm and the disjoint perfective paradigm in the future tenses. Taking this line of argumentation one step further and giving it a slightly different spin, one might as well see the quirky extra H tone in all progressive past tenses, except P3, in the same context, i.e. as taking part in a general progressive pattern of *‘N- ... -ə*, possibly representing (relics of) an erstwhile periphrastic construction of an auxiliary plus nominalized main verb. Under this assumption, P0 and P3 stand out in

auxiliary which produces a rising tone in the case of P1 and P2: /yí/ → [yĩ], /tə́/ → [tǎ́]. The same H tone accounts for the tonal differences between the P0 CJ and the corresponding progressive:

- (18) a. /Búŋ ʰ lám kə́báyn/ → Búŋ lám kə́báyn ‘Bung has cooked the fufu.’
 b. /Búŋ ʰ lám-ə kə́báyn/ → Búŋ lámə kə́báyn ‘Bung is cooking the fufu.’

As seen in (18a), a L tonal morpheme precedes the verb in the P0 CJ which links to the verb, causing its H to delink. The delinked H then causes the following /kə́-/ noun prefix to become M. In contrast, in (18b) a H tonal morpheme precedes the verb in the P0 progressive, and the verb is realized H-H with its schwa suffix. The /kə́-/ noun prefix is therefore not affected.

5 Negative forms

From the summary in Table 5 and the forms in Appendix 2 it can be observed that negative indicative verb forms all involve the markers *ə kó* preceding the tense auxiliaries, as in the following P2 Neg perfective forms:

- (19) a. Búŋ ə kó tə zhì kə́-báyn ‘Bung did not eat the fufu.’
 Bung PFV NEG P2 eat 7-fufu
 b. Búŋ ə kó tə lám kə́-báyn ‘Bung did not cook the fufu.’
 Bung PFV NEG P2 cook 7-fufu
 c. Búŋ ə kó tə sə̀ŋtə́ kə́-báyn ‘Bung did not sift the fufu.’
 Bung PFV NEG P2 sift 7-fufu
- (20) a. Búŋ ə kó tə lè kə́-báyn ‘Bung did not eat the fufu.’
 Bung PFV NEG P2 eat 7-fufu
 b. Búŋ ə kó tə kùm kə́-báyn ‘Bung did not touch the fufu.’
 Bung PFV NEG P2 touch 7-fufu
 c. Búŋ ə kó tə lím̀sə́ kə́-báyn ‘Bung did not heat the fufu.’
 Bung PFV NEG P2 heat 7-fufu

As mentioned, there is no CJ/DJ distinction in the negative, although it is tempting to identify the omnipresent negative H tone schwa as the same *ə* observed in the DJ, summarized above in Table 4.¹⁰ Table 2 also shows that the progressives have the same tones as in the affirmative, again shaded in green. Thus compare the following sentences with those in (15) and (16).

- (21) a. Búŋ ə kó ʰlám-ə́ kə́-báyn ‘Bung is not cooking fufu.’ (P0)
 Bung PFV NEG cook-PROG 7-fufu
 b. Búŋ ə kó tǎ́ n-lám-ə́ kə́-báyn ‘Bung was not cooking fufu.’ (P2)
 Bung PFV NEG P2 N-cook-PROG 7-fufu
 c. Búŋ ə kó ʰné n-lám-ə́ kə́-báyn ‘Bung will not be cooking fufu.’ (F2)
 Bung PFV NEG F2 N-cook-PROG 7-fufu
- (22) a. Búŋ ə kó kùm-ə́ kə́-báyn ‘Bung is not touching fufu.’ (P0)
 Bung PFV NEG touch-PROG 7-fufu
 b. Búŋ ə kó tǎ́ ŋ-kùm-ə́ kə́-báyn ‘Bung was not touching fufu.’ (P2)
 Bung PFV NEG P2 N-touch-PROG 7-fufu
 c. Búŋ ə kó ʰné ŋ-kùm-ə́ kə́-báyn ‘Bung will not be touching fufu.’ (F2)
 Bung PFV NEG F2 N-touch-PROG 7-fufu

that they do not share the full package of markers, P0-PROG lacking N- and P3 lacking the preverbal H (and possibly also the progressive N-, since the nasal prefix might as well be interpreted as the ordinary P3 marker).

¹⁰ It is well known that both DJ and negation involve an inherent focus, hence form a natural class (see Hyman & Watters 1984).

The downsteps on *lámá* in (21a) and *né* in (21c) show that there is a floating L following *kó*. One might have proposed that the underlying representation of the negative indicative marker is /kò/ which would undergo H tone spreading from the preceding /á/, exactly as the F2 auxiliary /nè/ undergoes after the DJ marker /á/ in (13) and (14), and similarly in other future tenses in Appendix 1. However, since the non-indicative negative marker is /ká/, as in *ká nzhíi kàbáyn* ‘don’t be eating fufu!’, it is equally likely that the negative indicative marker is /kó’/.

Before concluding this section, we should note that there are some tonal differences between the perfective affirmative and negative paradigms. What is curious is that the P tenses take the same tones as the corresponding affirmative CJ forms (shaded in gray except for P3 blue), while the F tenses take the same tones as the corresponding affirmative DJ forms (shaded in yellow). We will return to this in §8, where we propose a ranked set of morphosyntactic tone assignment rules.

6 Non-indicative affirmative forms

In the preceding sections we have seen that Babanki distinguishes seven tenses in indicative forms: P0-P3 and F1-F3. In this and the following section we describe the non-indicative forms which by their semantics are all future-oriented. As a result each of them has only three forms which correspond to indicative F1-F3. In addition, there is no CJ/DJ contrast. As we will see, only what we identify as F1 is really different from indicative marking in its tonal patterns.

We start with the singular imperative forms which were already shown in Table 2 above. As seen in Appendix 3, the bare F1 imperative has the same tone pattern as the indicative F1 DJ and negative, shaded yellow, while the F2 and F3 imperatives share the grey-shaded pattern of their corresponding CJ forms, as in (23b,c) involving the H tone verb /lám/ ‘cook’ and the L tone verbs /kùm/ ‘touch’ and /lìmsà/ ‘heat’:¹¹

(23)	a.	F1		<i>lám</i>	<i>kā-báyn</i>	‘cook the fufu!’
				cook	7-fufu	
				<i>kùm-á</i>	<i>kā-báyn</i>	‘touch the fufu!’
				touch-IMP	7-fufu	
				<i>lìmsá</i>	<i>kā-báyn</i>	‘heat the fufu!’
				heat.IMP	7-fufu	
	b.	F2	<i>nè</i>	<i>lám</i>	<i>kā-báyn</i>	‘cook the fufu!’
			F2	cook	7-fufu	
			<i>nè</i>	<i>kùm</i>	<i>kà-báyn</i>	‘touch the fufu!’
			F2	touch	7-fufu	
			<i>nè</i>	<i>lìmsà</i>	<i>kà-báyn</i>	‘heat the fufu!’
			F2	heat	7-fufu	
	c.	F3	<i>lù</i>	<i>lám</i>	<i>kā-báyn</i>	‘cook the fufu!’
			F3	cook	7-fufu	
			<i>lù</i>	<i>kùm</i>	<i>kà-báyn</i>	‘touch the fufu!’
			F3	touch	7-fufu	
			<i>lù</i>	<i>lìmsà</i>	<i>kà-báyn</i>	‘heat the fufu!’
			F3	heat	7-fufu	

As in the future indicative forms, L tone verbs acquire a H tone schwa, hence *kùmá* ‘touch!’ in (23a). As seen in (24a), neither the F1 marker /à/ nor the H tone schwa suffix appear in the plural imperative.

¹¹ Full paradigms of the non-indicative forms discussed in this section can be found in Appendices 3–7.

(24)	a.	F1	ghàṅ	lám	kā-báyn	‘you pl. cook the fufu!’
			2PL	cook	7-fufu	
			ghàṅ	kúm	kà-báyn	‘you pl. touch the fufu!’
	2PL	touch	7-fufu			
	b.	F2	ghàṅ	lám [↓] sá	kā-báyn	‘you pl. heat the fufu!’
			2PL	heat	7-fufu	
			ghàṅ	nè	lám	kā-báyn
	2PL	F2	cook	7-fufu		
	c.	F3	ghàṅ	nè	kùm	kà-báyn
2PL			F2	touch	7-fufu	
ghàṅ			nè	lìmsà	kā-báyn	‘you pl. heat the fufu!’
2PL	F2	heat	7-fufu			
c.	F3	ghàṅ	lù	lám	kā-báyn	‘you pl. cook the fufu!’
		2PL	F3	cook	7-fufu	
		ghàṅ	lù	kùm	kà-báyn	‘you pl. touch the fufu!’
2PL	F3	touch	7-fufu			
c.	F3	ghàṅ	lù	lìmsà	kā-báyn	‘you pl. heat the fufu!’
		2PL	F3	heat	7-fufu	

However, the F1 plural imperative shows a H tone prefix, which links to a following L verb. As seen most clearly when the L verb is bisyllabic, a H-[↓]H downstep sequence is created: /ghàṅ ’lìmsà kàbáyn/ → ghàṅ lìms[↓]á kàbáyn ‘you pl. heat the fufu!’.¹² In the case of a monosyllabic verb a H[↓]H contour is expected on the one syllable. Instead, since such contours are not permitted, the second H is deleted, with the preceding L, now delinked, preserving the L on the prefix of ‘fufu’.¹³ Finally, note that the F2 and F3 forms in (24b,c) are identical to the F2–F3 indicative forms in Appendix 1. The same is true of the corresponding hortative forms in (25), extracted from Appendix 5.

(25)	a.	F1	yúwù	lám	kā-báyn	‘let’s cook the fufu!’
			1PL	cook	7-fufu	
			yúwù	kúm	kà-báyn	‘let’s touch the fufu!’
	1PL	touch	7-fufu			
	b.	F2	yúwù	lám [↓] sá	kā-báyn	‘let’s heat the fufu!’
			1PL	heat	7-fufu	
			yúwù	nè	lám	kā-báyn
	1PL	F2	cook	7-fufu		
	c.	F3	yúwù	nè	kùm	kà-báyn
1PL			F2	touch	7-fufu	
yúwù			nè	lìmsà	kā-báyn	‘let’s heat the fufu!’
1PL	F2	heat	7-fufu			
c.	F3	yúwù	lù	lám	kā-báyn	‘let’s cook the fufu!’
		1PL	F3	cook	7-fufu	
		yúwù	lù	kùm	kà-báyn	‘let’s touch the fufu!’
1PL	F3	touch	7-fufu			
c.	F3	yúwù	lù	lìmsà	kā-báyn	‘let’s heat the fufu!’
		1PL	F3	heat	7-fufu	

¹² We color this pattern gold in the appendices.

¹³ We find this analysis preferable to restricting the suffixal H to all forms except monosyllabic L verbs. Recall that the suffixal H is needed after H verbs as well in order for the noun prefix to be raised to M.

Again the F1 has both a preceding H prefix and suffix, while the F2 and F3 forms are identical to those in the indicative in Appendix 1. (See Appendix 4 for more plural imperative examples.)

The same pattern is also found in the subjunctive forms in (26) and the future conditional forms in (27), extracted from Appendices 6 and 7:¹⁴

(26)	a.	F1	...	lá	yúwù	lám	kā-báyn	‘(Bung wants) that we cook the fufu.’	
				COMP	1PL	cook	7-cook		
			...	lá	yúwù	lám	kà-báyn	‘(Bung wants) that we touch the fufu.’	
		COMP	1PL	kúm	7-cook				
		...	lá	yúwù	lím [↓] só	kà-báyn	‘(Bung wants) that we heat the fufu.’		
		COMP	1PL	heat	7-cook				
	b.	F2	...	lá	yúwù	nè	lám	kā-báyn	‘(Bung wants) that we cook the fufu.’
				COMP	1pl	F2	cook	7-fufu	
			...	lá	yúwù	nè	kùm	kà-báyn	‘(Bung wants) that we touch the fufu.’
	COMP	1pl	F2	touch	7-fufu				
	...	lá	yúwù	nè	lìmsò	kà-báyn	‘(Bung wants) that we heat the fufu.’		
	COMP	1pl	F2	heat	7-fufu				
c.	F3	...	lá	yúwù	lù	lám	kā-báyn	‘(Bung wants) that we cook the fufu.’	
			COMP	1pl	F3	cook	7-fufu		
		...	lá	yúwù	lù	kùm	kà-báyn	‘(Bung wants) that we touch the fufu.’	
	COMP	1pl	F3	touch	7-fufu				
	...	lá	yúwù	lù	lìmsò	kà-báyn	‘(Bung wants) that we heat the fufu.’		
	COMP	1pl	F3	heat	7-fufu				
(27)	a.	F1	sétsèn	Búŋ	lám	kā-báyn	‘if Bung cooks the fufu ...’		
			COND	Bung	cook	7-fufu			
			sétsèn	Búŋ	kúm	kà-báyn	‘if Bung touches the fufu ...’		
			COND	Bung	touch	7-fufu			
		sétsèn	Búŋ	lím [↓] só	kā-báyn	‘if Bung heats the fufu ...’			
		COND	Bung	heats	7-fufu				
	b.	F2	sétsèn	Búŋ	nè	lám	kā-báyn	‘if Bung cooks the fufu ...’	
			COND	Bung	F2	cook	7-fufu		
			sétsèn	Búŋ	nè	kùm	kà-báyn	‘if Bung touches the fufu ...’	
			COND	Bung	F2	touch	7-fufu		
		sétsèn	Búŋ	nè	lìmsò	kā-báyn	‘if Bung heats the fufu ...’		
		COND	Bung	F2	heat	7-fufu			
c.	F3	sétsèn	Búŋ	lù	lám	kā-báyn	‘if Bung cooks the fufu ...’		
		COND	Bung	F3	cook	7-fufu			
		sétsèn	Búŋ	lù	kùm	kà-báyn	‘if Bung touches the fufu ...’		
		COND	Bung	F3	touch	7-fufu			
	sétsèn	Búŋ	lù	lìmsò	kā-báyn	‘if Bung heats the fufu ...’			
	COND	Bung	F3	heat	7-fufu				

Since the F2 and F3 forms are non-distinct from the corresponding indicative F2 and F3, it is reasonable to consider only F1 as a non-indicative. However, even the F1 non-indicative succumbs to the expected, green-shaded pattern that characterizes the progressive aspect throughout the verb paradigm:

¹⁴ Since the past conditional forms take the same (yellow) tone pattern in both the affirmative and negative, they are treated together in the next section.

- (28) a. IMP.SG é nlámé kèbáyn ‘be cooking the fufu!’
 b. IMP.PL ghèṅ é nlámé kèbáyn ‘you pl. be cooking the fufu!’
 c. HORT yúwù é nlámé kèbáyn ‘let’s be cooking the fufu!’
 d. SBJV ...lá yúwù é nlámé kèbáyn ‘(Bung wants) that we be cooking the fufu.’
 e. COND sòtsèn Búṅ dí? ká nlámé kèbáyn ... ‘if Bung is cooking the fufu...’

In the following section we will see that, with the exception of the conditional negative, the corresponding negative forms largely tell the same story.

7 Non-indicative negative forms

As seen first in the following singular imperative forms taken from Appendix 9, the negative markers are consistently different in indicative vs. non-indicative forms.

- (29) a. F1 ká ↓lám kē-báyn ‘don’t cook the fufu!’
 NEG.F1 cook 7-fufu
 ká kùm kē-báyn ‘don’t touch the fufu!’
 NEG.F1 touch 7-fufu
 ká límśó kē-báyn ‘don’t heat the fufu!’
 NEG.F1 heat 7-fufu
 b. F2 ká né ↓lám kēbáyn ‘don’t cook the fufu!’
 NEG F2 cook 7-fufu
 ká né kùm kē-báyn ‘don’t touch the fufu!’
 NEG F2 touch 7-fufu
 ká né límśó kē-báyn ‘don’t heat the fufu!’
 NEG F2 heat 7-fufu
 c. F3 ká lú ↓lám kēbáy ‘don’t cook the fufu!’
 NEG F3 cook 7-fufu
 ká lú kùm kē-báyn ‘don’t touch the fufu!’
 NEG F3 touch 7-fufu
 ká lú límśó kē-báyn ‘don’t heat the fufu!’
 NEG F3 heat 7-fufu

Whereas we established /kó ̀/ as the indicative negative marker, the forms in (29) show that the non-indicative marker is /kǎ/, which however fuses with the F1 marker /à/ in (29a). The H of /kǎ/ spreads onto the tense marker, delinking its L, which then triggers a downstep on a following H: /kǎ à/, /kǎ nè/, /kǎ lù/ → kǎ ̀, kǎ né ̀, kǎ lú ̀. Finally, although /kùm/ ‘touch’ lacks the final H tone schwa seen in the affirmative imperative, it is clear that all of the above forms have a H suffix, hence a M tone on the prefix kē-.

The corresponding negative plural imperatives taken from Appendix 10 appear in (30).

- (30) a. F1 ká ghèṅ lám kē-báy n ‘you pl. don’t cook the fufu!’
 NEG 2PL cook 7-fufu
 ká ghèṅ kùm kē-báyn ‘you pl. don’t touch the fufu!’
 NEG 2PL touch 7-fufu
 ká ghèṅ lím[↓]śó kē-báyn ‘you pl. don’t heat the fufu!’
 NEG 2PL heat 7-fufu
 b. F2 ká ghèṅ nè lám kē-báyn ‘you pl. don’t cook the fufu!’
 NEG 2PL F2 cook 7-fufu
 ká ghèṅ nè kùm kē-báyn ‘you pl. don’t touch the fufu!’
 NEG 2PL F2 touch 7-fufu
 ká ghèṅ nè límśò kē-báyn ‘you pl. don’t heat the fufu!’
 NEG 2PL F2 heat 7-fufu

c.	F3	ká	ghèŋ	lù	lám	kā-báyn	‘you pl. don’t cook the fufu!’
		NEG	2PL	F3	cook	7-fufu	
		ká	ghèŋ	lù	kùm	kà-báyn	‘you pl. don’t touch the fufu!’
		NEG	2PL	F3	touch	7-fufu	
		ká	ghèŋ	lù	lìmsə	kà-báyn	‘you pl. don’t heat the fufu!’
		NEG	2PL	F3	heat	7-fufu	

This paradigm is exactly identical to that of the corresponding affirmatives in (24), except for the presence of *ká* occurring before the subject, here the second person plural pronoun *ghèŋ*. The hortatives in (31) differ only in the presence of the first person plural pronoun *yúwù*, from Appendix 10, and similarly the subjunctives in (32) from Appendix 12 differ only in the presence of the complementizer *lá*:

(31)	a.	F1	ká	yúwù		lám	kā-báyn	‘let’s not cook the fufu!’	
			NEG	1pl		cook	7-fufu		
			ká	yúwù		kùm	kà-báyn	‘let’s not touch the fufu!’	
			NEG	1pl		touch	7-fufu		
			ká	yúwù		lím ^h sə	kā-báyn	‘let’s not heat the fufu!’	
			NEG	1pl		heat	7-fufu		
	b.	F2	ká	yúwù	nè	lám	kā-báyn	‘let’s not cook the fufu!’	
			NEG	1pl	F2	cook	7-fufu		
			ká	yúwù	nè	kùm	kà-báyn	‘let’s not touch the fufu!’	
			NEG	1pl	F2	touch	7-fufu		
			ká	yúwù	nè	lìmsə	kà-báyn	‘let’s not heat the fufu!’	
			NEG	1pl	F2	heat	7-fufu		
	c.	F3	ká	yúwù	lù	lám	kā-báyn	‘let’s not cook the fufu!’	
			NEG	1pl	F3	cook	7-fufu		
			ká	yúwù	lù	kùm	kà-báyn	‘let’s not touch the fufu!’	
			NEG	1pl	F3	touch	7-fufu		
			ká	yúwù	lù	lìmsə	kà-báyn	‘let’s not heat the fufu!’	
			NEG	1pl	F3	heat	7-fufu		
(32)	a.	F1	... lá	ká	yúwù	lám	kā-báyn	‘(Bung wants) that we not cook the fufu!’	
			COMP	NEG	1pl	cook	7-fufu		
			... lá	ká	yúwù	kùm	kà-báyn	‘(Bung wants) that we not touch the fufu!’	
			COMP	NEG	1pl	touch	7-fufu		
			... lá	ká	yúwù	lím ^h sə	kà-báyn	‘(Bung wants) that we not heat the fufu!’	
			COMP	NEG	1PL	heat	7-fufu		
	b.	F2	... lá	ká	yúwù	nè	lám	kā-báyn	‘(Bung wants) that we not cook the fufu!’
			COMP	NEG	1PL	F2	cook	7-fufu	
			... lá	ká	yúwù	nè	kùm	kà-báyn	‘(Bung wants) that we not touch the fufu!’
			COMP	NEG	1PL	F2	touch	7-fufu	
			... lá	ká	yúwù	nè	lìmsə	kà-báyn	‘(Bung wants) that we not heat the fufu!’
			COMP	NEG	1PL	F2	heat	7-fufu	
	c.	F3	... lá	ká	yúwù	lù	lám	kā-báyn	‘(Bung wants) that we not cook the fufu!’
			COMP	NEG	1PL	F3	cook	7-fufu	
			... lá	ká	yúwù	lù	kùm	kà-báyn	‘(Bung wants) that we not touch the fufu!’
			COMP	NEG	1PL	F3	touch	7-fufu	
			... lá	ká	yúwù	lù	lìmsə	kà-báyn	‘(Bung wants) that we not heat the fufu!’
			COMP	NEG	1PL	F3	heat	7-fufu	

It is clear that the plural imperative, hortative, and subjunctive F1 realize the same non-indicative mood which we can call subjunctive, while the F2 and F3 inflections are indistinguishable from the corresponding indicative forms. Not so with the negative conditional, which requires a more complex realization, the following from Appendix 13:

(33)	a.	F1	sátsèn	Búŋ	dí?	kó	lám	kā-báyn	‘if Bung doesn’t cook the fufu ...’			
			COND	Bung	COP	NEG	cook	7-fufu				
					sátsèn	Búŋ	dí?	kó	kùm	kā-báyn	‘if Bung doesn’t touch the fufu ...’	
					COND	Bung	COP	NEG	touch	7-fufu		
					sátsèn	Búŋ	dí?	kó	lìmsó	kā-báyn	‘if Bung doesn’t heat the fufu ...’	
					COND	Bung	COP	NEG	heat	7-fufu		
	b.	F2	sátsèn	Búŋ	nè	dí?	kó	lám	kā-báyn	‘if Bung doesn’t cook the fufu ...’		
			COND	Bung	F2	COP	NEG	cook	7-fufu			
					sátsèn	Búŋ	nè	dí?	kó	kùm	kā-báyn	‘if Bung doesn’t touch the fufu ...’
					COND	Bung	F2	COP	NEG	touch	7-fufu	
					sátsèn	Búŋ	nè	dí?	kó	lìmsó	kā-báyn	‘if Bung doesn’t heat the fufu ...’
					COND	Bung	F2	COP	NEG	heat	7-fufu	
c.	F3	sátsèn	Búŋ	lù	dí?	kó	lám	kā-báyn	‘if Bung doesn’t cook the fufu ...’			
		COND	Bung	F3	COP	NEG	cook	7-fufu				
				sátsèn	Búŋ	lù	dí?	kó	kùm	kā-báyn	‘if Bung doesn’t touch the fufu ...’	
				COND	Bung	F3	COP	NEG	touch	7-fufu		
				sátsèn	Búŋ	lù	dí?	kó	lìmsó	kā-báyn	‘if Bung doesn’t heat the fufu ...’	
				COND	Bung	F3	COP	NEG	heat	7-fufu		

While the F1 doesn’t have an overt tense marker, the F2 and F3 markers *nè* and *lù* appear before another morpheme *dí?* followed by the negative morpheme *kó*. Since *dí?* is identical to the copular verb /*dí?*/ ‘be’, we interpret the above historically as ‘if Bung will be not cook, touch, heat...’. The main verb lacks a H prefix in the F1, although the F1–F3 all have a H suffix. We have thus colored these cells yellow in Appendix 13, indicating that the tones are identical with the indicative future pattern, which is in turn the same in the affirmative and negative (see Appendices 1 and 2).

Finally, as seen in Appendices 8 and 14, the affirmative and negative past conditional forms all take the same (yellow) tone pattern. The following representative examples show that instead of the pre-subject complementizer *sátsèn*, the auxiliary form *tí* occurs after the tense marker in the past conditional:

(34)	a.	P0	Búŋ	tí	↓lám	kābáyn	‘if Bung had cooked the fufu ...’			
			Bung	COND	cook	7-fufu				
					Búŋ	tí	kùm	kābáyn	‘if Bung had touched the fufu ...’	
					Bung	COND	touch	7-fufu		
					Búŋ	tí	lìmsó	kābáyn	‘if Bung had heated the fufu ...’	
					Bung	COND	heat	7-fufu		
	b.	P1	Búŋ	yì	tí	↓lám	kābáyn	‘if Bung had cooked the fufu ...’		
			Bung	P1	COND	cook	7-fufu			
					Búŋ	yì	tí	kùm	kābáyn	‘if Bung had touched the fufu ...’
					Bung	P1	COND	touch	7-fufu	
					Búŋ	yì	tí	lìmsó	kābáyn	‘if Bung had heated the fufu ...’
					Bung	P1	COND	heat	7-fufu	
	c.	P2	Búŋ	tè	tí	↓lám	kābáyn	‘if Bung had cooked the fufu ...’		
			Bung	P2	COND	cook	7-fufu			
					Búŋ	tè	tí	kùm	kābáyn	‘if Bung had touched the fufu ...’
					Bung	P2	COND	touch	7-fufu	

		Búŋ	tè	tí	lìmsó	kābáyŋ	‘if Bung had heated the fufu ...’
		Bung	P2	COND	heat	7-fufu	
d.	P3	Búŋ	è	n-tí	↓lám	kābáyŋ	‘if Bung had cooked the fufu ...’
		Bung	P3	N-COND	cook	7-fufu	
		Búŋ	è	n-tí	kùm	kābáyŋ	‘if Bung had touched the fufu ...’
		Bung	P3	N-COND	touch	7-fufu	
		Búŋ	è	n-tí	lìmsó	kābáyŋ	‘if Bung had heated the fufu ...’
		Bung	P3	N-COND	heat	7-fufu	

Since *tí* takes a nasal prefix in the P3, it is likely that *tí* was once a verb, although its original meaning cannot be ascertained.¹⁵ The corresponding negatives are provided in (35).

(35)	a.	P0	Búŋ	tí	dì?	ká	↓lám	kābáyŋ	‘if Bung hadn’t cooked the fufu ...’	
			Bung	COND	COP	NEG	cook	7-fufu		
			Búŋ	tí	dì?	ká	kùm	kābáyŋ	‘if Bung hadn’t touched the fufu ...’	
			Bung	COND	COP	NEG	touch	7-fufu		
			Búŋ	tí	dì?	ká	lìmsó	kābáyŋ	‘if Bung hadn’t heated the fufu ...’	
			Bung	COND	COP	NEG	heat	7-fufu		
	b.	P1	Búŋ	yì	tí	dì?	ká	↓lám	kābáyŋ	‘if Bung hadn’t cooked the fufu ...’
			Bung	P1	COND	COP	NEG	cook	7-fufu	
			Búŋ	yì	tí	dì?	ká	kùm	kābáyŋ	‘if Bung hadn’t touched the fufu ...’
			Bung	P1	COND	COP	NEG	touch	7-fufu	
			Búŋ	yì	tí	dì?	ká	lìmsó	kābáyŋ	‘if Bung hadn’t heated the fufu ...’
			Bung	P1	COND	COP	NEG	heat	7-fufu	
	c.	P2	Búŋ	tè	tí	dì?	ká	↓lám	kābáyŋ	‘if Bung hadn’t cooked the fufu ...’
			Bung	P2	COND	COP	NEG	cook	7-fufu	
			Búŋ	tè	tí	dì?	ká	kùm	kābáyŋ	‘if Bung hadn’t touched the fufu ...’
			Bung	P2	COND	COP	NEG	touch	7-fufu	
			Búŋ	tè	tí	dì?	ká	lìmsó	kābáyŋ	‘if Bung hadn’t heated the fufu ...’
			Bung	P2	COND	COP	NEG	heat	7-fufu	
	d.	P3	Búŋ	è	n-tí	dì?	ká	↓lám	kābáyŋ	‘if Bung hadn’t cooked the fufu ...’
			Bung	P3	N-COND	COP	NEG	cook	7-fufu	
			Búŋ	è	n-tí	dì?	ká	kùm	kābáyŋ	‘if Bung hadn’t touched the fufu ...’
			Bung	P3	N-COND	COP	NEG	touch	7-fufu	
			Búŋ	è	n-tí	dì?	ká	lìmsó	kābáyŋ	‘if Bung hadn’t heated the fufu ...’
			Bung	P3	N-COND	COP	NEG	heat	7-fufu	

The same auxiliary + negative sequence *dì? ká* is used as in the future negative conditional.

This completes our survey through the different verb paradigms which we have been able to consider in our study. We conclude in §8 by outlining an integrative analysis followed by discussion.

8 Towards an integrated analysis

In the preceding sections we have presented the different Babanki tense, aspect, and mood distinctions, both affirmative and negative. While we have presented a subset of examples of each, a full and systematic presentation of all of the forms we have considered is found in Appendices 1–14. While we have given partial interpretations and analyses, we have yet to pull it all together into one coherent picture. This is our first goal in this section. Our second goal, however preliminary, will be to comment on what we think is the most promising conceptualization of the Babanki verb inflectional system and others like it.

¹⁵ It is not clear if or how the past conditional auxiliary could derive from the present day Babanki verb *tí* ‘make a bed (from bamboo)’ or the lexicalized causative verb *tísá* ‘arrange’.

We begin by recapping the preverbal “auxiliaries” in Table 6, where the different cells in the paradigm are also color-coded for tone pattern.¹⁶

Table 6: Preverbal segmental and tonal marking in the Babanki verb paradigm

	indicative.aff			ind.neg		imp.aff		imp.neg		imp.pl.aff.		imp.pl.neg		cond.neg
	CJ	DJ	PR	PF	PR	PF	PR	PF	PR	PF	PR	PF	PR	
P0	ʼ	á	ʼ	á kó ʼ	á kó ʼ					tí ʼ				tí di? ká
P1	yì	á yí	yĩ	á kó yì	á kó yĩ					yì tí ʼ				yì tí di? ká
P2	tà	á tã	tã	á kó tà	á kó tã					tà tí ʼ				tà tí di? ká
P3	à	á	à	á kó ʼ	á kó ʼ					à ntí ʼ				à ntí di? ká
F1	à	á ʼ	á	á kó ʼ	á kó ʼ	∅	à	ká ʼ	ká	ʼ	á	ká...ʼ	ká...á	dí? ká
F2	nè	á né ʼ	á né	á kó ʼné ʼ	á kó ʼné	nè	né	ká né ʼ	ká né	nè	né	ká...nè	ká...né	nè di? ká
F3	lù	á lú ʼ	á lú	á kó ʼlú ʼ	á kó ʼlú	lù	lú	ká lú ʼ	ká lú	lù	lú	ká...lù	ká...lú	lù di? ká

As seen most clearly in the F2 and F3 indicative negative sequences, *á kó ʼné ʼ* and *á kó ʼlú ʼ*, there is a maximum of three segmental slots, which we can label as FOCUS, NEGATION, and TENSE. The only filler of the focus slot is the DJ marker /á/, which we assume is the same morpheme as the [á] that precedes the indicative negative marker /kóʼ/, but does not occur with the non-indicative negative marker /ká/.¹⁷ This leaves the P0–P3 and F1–F3 tense markers which were presented in Table 1 above and are held constant throughout the paradigm. Except for the unassociated L tones, the intention in Table 6 is to show the output forms, including tonal variations that were discussed in earlier sections, e.g. P1 *yì*, *yí*, and *yĩ*. We have proposed that the underlying forms of the tense markers are as they appear in the first (CJ) column, where they all have underlying L tone. Although the L tone does not appear in the P0 or P3 DJ (whose tone pattern is irregular), it is only the F1 that is inconsistent in its segmental marking: /à/ appears only in the indicative affirmative and the singular imperative negative, where *ká ʼ* is the realization of /ká/ + /à/. Otherwise the variations in tense marking are largely tonal: While the P1 and P2 markers /yì/ and /tã/ become HL falling tone [yí] and [tã] after the DJ marker /á/, the future auxiliaries /nè/ and /lù/ instead become H tone [né] and [lú] plus a delinked L tone which, except in the progressive, causes a following H to become downstepped. In the progressive H and L tone verbs begin with their base tone, hence without any interaction with what precedes. This might be attributable to the fact that, except in the P0, progressives take a nasal prefix that may effectively block any tonal interaction with what precedes.¹⁸

The progressive is in fact quite special in the paradigm. As discussed in §4, progressive forms are consistent in their tone pattern: Except in the P0, the verb takes a toneless nasal prefix, and all progressives assign a L tone -à suffix, which however assimilates to the H of a monosyllabic H tone verb: /n-lám-à/ ‘cook.PROG’ → *n-lám-á*. Outside the progressive, it is only the P3 that also takes a nasal prefix. Curiously, the P3 also assigns a schwa suffix, but only to L tone monosyllabic verbs, e.g. to /kùm/ ‘touch’ in *Búnj à*

¹⁶ In Table 6, PF stands for perfective and PR for progressive. The three dots (...) in the non-indicative columns indicate the position of the subject, which follows the negative marker *ká* but precedes the tense marker. Note also that the yellow non-indicative P0–P3 cells refer exclusively to conditional clauses, which receive the same auxiliary markers in the corresponding empty green progressive cells to their right.

¹⁷ Note that /á/ is not restricted to main clause indicatives, as it can also occur in a relative clause, e.g. *kàbáyñ á Búnj á kó ʼné ʼlám* ‘the fufu that Bung will not cook (F2)’.

¹⁸ There are potentially two problems with this idea. First, as we have said, the P0 doesn’t take a nasal prefix, but is tonally identical to the other progressive forms. Second, although the tone patterns are irregular, P3 non-progressives also place a nasal prefix on the verb, but do allow a tonal interaction with the preceding auxiliary: L tone spreading occurs in the P3 CJ and negative, while H tone spreading occurs in the P3 DJ, e.g. *à + nshítà* → *à nshítà* ‘collected’, *á + nshìsà* → *á nshìsà* ‘removed’.

ɲkùmá kǎbáyɲ (CJ) and *Búɲ é ɲkùmà lí kǎbáyɲ* (DJ), both meaning ‘Bung touched the fufu’. The same pattern is found only in one other cell, the affirmative singular imperative, which again assigns the schwa suffix only to monosyllabic L tone verbs: *kùmá* ‘touch!’.

Finally, there is the issue of assigning prefixal and suffixal tones. In accounting for the surface realizations it is necessary to control for whether the verb stem is mono- or bisyllabic. Recall that we have analyzed bisyllabic verbs as having an underlyingly toneless second syllable which will take the same tone as the tone of the root unless overridden by a suffixal tone. With this in mind, Table 7 characterizes the six color-coded stem-tone patterns in terms of their preceding and following tonal environments. (T stands for the base /H/ or /L/ of the verb root.)

Table 7: Summary of Babanki stem-tone patterns in tonal context

	pre-verb	verb tone	suffix	tone on noun prefix kǎ-
Grey	L	L-T	∅	L except M after 1σ /H/ stem
Orange	é	H-T	-è only on 1σ L verbs	L throughout
Yellow	(L)	T-H	-é after L verbs in aff.imp.sg.	M throughout
Blue	L	L-H	-é after L verbs	M except after /H-∅/ stem
Gold	H	H-(T)-H	-H except after 1σ L verbs	M except after 1σ /L/ stems
Green	H except P3	T-L	-è except -é after 1σ H verbs	L throughout

Only the grey pattern lacks a suffix. The P0 and P3 orange DJ cells are unique in requiring a non-suffixal formative /lí/ following the verb. What is striking is that four of the six rows show an agreement between the pre-verb tone and the first tone of the verb stem: grey and blue L vs. orange and gold H. In the first group L tone spreading causes a H-H verb to be realized as L-H, while in the second group H tone spreading causes a L-L verb to become H-L. The (L) of the yellow row indicates that a L is sometimes present, but does not interact with the verb stem other than to cause a H verb to become downstepped, e.g. *ká + à + lám + kǎbáyɲ* → *ká `lám kǎbáyɲ* → *ká ʹlám kǎbáyɲ* ‘don’t cook the fufu!’ Finally, concerning the last row, shaded green, we have already seen that there is no tonal interaction between the auxiliary and the verb stem in progressives.

Turning to suffixes, both the P3 (orange) and progressives (green) assign a L, while yellow, blue and gold assign a H. Except for the gold pattern a schwa suffix also appears, although with the restrictions that are indicated. The H tone schwa is only found after L verbs – and is only discernible when the verb is monosyllabic. This is because a schwa would merge with the second vowel of a CV(C)CV verb stem. In fact, among the 757 verbs in Akumbu (2008), 323 verb stems are bisyllabic. Of these all but 19 have the shape CV(C)Cǎ. Of these 19, all but five have the shape CV?V where the vowels are identical, and three are clearly compounds. This leaves the following two verbs: *bǎɲlí* ‘be ripe’, *bóbó* ‘carry (child) on back’, on which a surface schwa does not accompany the suffixal L in the progressive: *Búɲ yí mbóbò kǎbáyɲ* ‘Bung was carrying the fufu’ (P1). While this accounts for why the schwa is visible only on monosyllabic verbs, e.g. directly on CVC roots or as an assimilated extra mora on CV roots, it does not explain why only the progressive assigns a schwa to both H and L roots. A clear generalization is that monosyllabic H tone roots never take a schwa outside the progressive. Our intuition has been that the schwa appears in contexts where a contour tone would otherwise arise. Derivations with the verb /kùm/ ‘touch’ representing the orange and blue patterns show this relation in (36).

- (36) a. *Búɲ é ɲkùmé lí kǎbáyɲ* ‘Bung touched the fufu.’ (P3 DJ)
 /*é ɲkùm/* → *é ɲkũm* → *é ɲkùmé*
- b. *Búɲ è ɲkùmá kǎbáyɲ* ‘Bung touched the fufu.’ (P3 CJ)
 /*è ɲkùm /* → *è ɲkũm* → *è ɲkùmá*

In (36a) the H tone of the /é/ DJ marker spreads onto the verb, creating an intermediate HL falling tone. Since falling tones are not allowed on roots, the “repair” is to insert a schwa to take the L part of the contour.

Similarly, in (36b), when the suffixal H is assigned to the verb, this creates an intermediate LH rising tone. Again, a schwa is inserted, this time to take the H part of the LH contour.

Whether the schwa is epenthetic, as we have represented it in (36), or whether it represents a historical retention, there is a potential problem with the assumption that schwa appears as an automatic response to avoiding contours. Recall that the yellow pattern also introduces a schwa, but only in the affirmative singular imperative, exemplified in (37a).

- (37) a. kùmá kǎbáyǎ ‘touch the fufu!’
 /kùm ‘/ + /kǎbáyǎ/ → kǔm kǎbáyǎ → kùmá kǎbáyǎ
- b. Búŋ é né kùm kǎbáyǎ ‘Bung will touch the fufu.’ (F2)
 /kùm ‘/ + /kǎbáyǎ/ → kùm + kǎbáyǎ → kùm kǎbáyǎ

While we have given the same derivation in (37a) as was seen in (36b), the question is why we get a different result in (37b) and every other yellow cell. In this derivation the suffixal H does not get assigned to the verb root, but rather to the following prefix *kǎ-*, thereby producing an intermediate HL falling tone. As shown by Hyman (1979) and Akumbu (2019), a L-HL-H sequence is simplified to L-M-H by a general contour simplification process.¹⁹ What this shows is that the appearance of a schwa appears to be partly phonologically and partly morphologically conditioned. One way to accomplish this is via a “co-phonology” approach (Inkelas & Zoll 2007). In the P3 and the affirmative singular imperative, inserting a schwa is chosen as a better repair to the constraint against contours on root morphemes, while in the future (yellow) pattern, assigning the H to the prefix is the chosen resolution.

We suspect that other morphologically conditioned responses will be needed elsewhere, perhaps to account for why H tone spreading converts the P1 and P2 markers /yì/ and /tǎ/ to *yí* and *tǎ* by H tone spreading, while the F2 and F3 markers /né/ and /lù/ instead become *né`* and *lú`*. We leave this issue for now to consider the more general question of how to assign the appropriate morphological marking to the right cells in the paradigm. Since much of the segmental marking is largely consistent (e.g. tense markers, negative markers, progressive nasal prefix, and schwa suffix), we will concentrate on tone, i.e. on the six color-coded patterns. We begin by noting that we have two extremes: Blue and orange cells are quite restricted, while green cells are quite general. It would seem therefore that we need to do two things. First, we need to isolate those cells for which a special statement will be needed. These can be considered the equivalent of tonal “exceptions”. Second, we can also isolate all of the green cells since their tone pattern is totally predictable. In previous work by the second author (e.g. Hyman 2016) the strategy pursued has been to first assign the general patterns, here the progressive (green), then look at the remainder to assign the next most general pattern among the non-progressives, then assign the next most general pattern, and so on. The idea is that by going from general to specific, the assignments may be simpler to state, the last assignment being the elsewhere case. The opposite strategy is also possible, where the most specific and unpredictable patterns are first assigned, leaving the more and more general ones to be accounted for next. In this approach the progressive would become the default tone pattern.²⁰

It seems to us that the most likely approach would be an OT-style account ranking the tone assignments by morphosyntactic feature combinations. This too is not an easy task, but at least it is coherent: while the

¹⁹ This same process is responsible for the M tone prefix found after monosyllabic /H/ verbs in the grey pattern: /Búŋ yì lám kǎbáyǎ/ → *Búŋ yì lám kǎbáyǎ* → *Búŋ yì lám ‘ kǎbáyǎ* → *Búŋ yì lám kǎbáyǎ* → *Búŋ yì lám kǎbáyǎ* ‘Bung cooked the fufu’ (P1). We are not proposing that so many steps are needed in such a derivation, only that the H of /lám/ has to shift onto the L prefix to derive the M tone. Bisyllabic H tone verbs do not raise the L prefix to M in the grey pattern: *Búŋ yì sǎŋtǎ kǎbáyǎ* ‘Bung sifted the fufu’.

²⁰ Babanki does not appear to lend itself to an assignment based on a layered morphological structure as Inkelas (2011: 75) proposes for Hausa. In that kind of approach, the tonal patterns would be assigned first to the innermost brackets, then to the next set of brackets, erasing the earlier assignment in case of conflict. Babanki seems rather to be more like the other cases discussed by Hyman (2016), where there is a paradigm of tone patterns dependent on combinations of features.

single feature PROG(ressive) assigns an undominated tone pattern, overriding all others, certain morpho-syntactic feature combinations will be very restricted, e.g. those requiring the blue and orange tone patterns. To show how this might be done we adopt the following “marked” privative features:

- (38) PROG : progressive
 DJ : disjoint
 NEG : negative
 PST : past
 FUT : future
 SBJV : subjunctive (includes imperative plural, hortative, conditional)
 IMP : imperative (singular)

To these we need to add the tenses: P0, P1, P2, P3, F1, F2, F3. In order to see how these features might be applied to the Babanki data, consider the following table, where we indicate which feature combinations receive which tone pattern:

Table 8: Tone patterns by features (first attempt)

Green	Orange	Blue	Gold	Yellow	Grey
PROG	P0 DJ P3 DJ	P3	SBJV F1	FUT DJ FUT NEG [-sbjv] IMP F1 IMP NEG PAST SBJV	PAST FUT

In Table 8 the six patterns are ordered with the intended ranking such that green is highest ranked and grey is lowest. In fact, the intention is for grey to be the default or elsewhere case. Thus, everything to the right of the first column is non-progressive. As a result of the ranking, once orange has assigned its pattern to the P0 DJ and P3 DJ, the blue pattern can now be assigned without regard to any feature other than P3. Similarly gold has targeted only the F1 subjunctive, leaving the F2 and F3 subjunctives untouched. This leaves us with yellow and grey. Here we meet a problem that will require a choice. Since we have ranked yellow higher than grey we have to be sure that it doesn't misappropriate certain cells, particularly the negative (non-progressive) subjunctive F2 and F3. These must remain grey. In Table 8 we put a [-sbjv] place holder, which violates the privativity of the features in (38). If we had changed the rankings, as in Table 9, we run into a different problem:

Table 9: Tone patterns by features (second attempt)

Green	Orange	Blue	Gold	Grey	Yellow
PROG	P0 DJ P3 DJ	P3	SBJV F1	PST IND FUT CJ SBJV IMP F2, F3	FUT IMP F1 IMP NEG PAST SBJV

Since SBJV F1 has already been assigned to gold, we can designate grey for the remaining affirmative and negative F2 and F3 subjunctives. However, we now need to refer to the “unmarked” value CJ in order not to assign grey to future DJ tenses. Since DJ was needed to assign the orange tone pattern, we have the equivalence of [±DJ].

Both analyses thus have problems.²¹ Two potential solutions seem possible. One is to change the feature values. If we could refer to the DJ, indicative and imperative negatives as having a special feature [+F], this

²¹ We also haven't addressed the conditional negative which takes the same yellow tone pattern as the non-DJ indicative and imperative negatives.

could be required in assigning the yellow pattern to them (as well as to the conditional negative), thereby eliminating the [-sbjv] in Table 7. Similarly, if we assigned a special feature to the future CJ and the F2 and F3 imperatives affirmative and subjunctive affirmative and negative, we could use that feature in Table 8. Perhaps there are other such ad hoc moves one could consider.

Another solution is to split up one or more of the columns. Since we would like to keep grey as the default, let's try modifying Table 9 by treating the CJ-like F2 and F3 non-indicatives as receiving their grey pattern first:²²

Table 10: Tone patterns by features (third attempt)

Green	Orange	Blue	Gold	Grey	Yellow	Grey
PROG	P0 DJ P3 DJ	P3	SBJV F1	IMP F2, F3 SBJV F2, F3	FUT DJ FUT NEG IMP F1 PAST SBJV	PST FUT

While perhaps not as aesthetic, splitting the grey pattern in two does allow us to simplify the yellow assignment considerably. Not only do we not need the [-sbjv], but also IMP NEG: This feature combination will be taken care of by IMP F1 (which will cover affirmative and negative) and FUT NEG (which will cover the IMP F2 and F3). The one detail we haven't accounted for is the yellow pattern of the conditional negative which, recall, is a periphrastic construction whose main verb could be considered non-subjunctive.²³

To conclude, we should perhaps mention still another strategy: Conflate two of the colors! As we have tried to indicate, the tonal patterns on the verb stem are very much determined by their tonal surroundings. The yellow and gold patterns look very similar except that the latter has a preverbal H tone prefix, which is lacking in the yellow pattern. The above tables are designed only to account for the tones, not for the markers that occur before or after the verb stem. While we haven't pursued this or other conceivable approaches, we point this out for anyone who would like to try their hand at coming up with a more comprehensive account that includes these markers. Since we include all of the data we have considered in the appendices, we hope we have provided enough to work on there – but invite others to expand the coverage both in Babanki and in related languages in the future.

Abbreviations and Symbols

↓ Downstep, 1PL First person plural, 2PL Second Person Plural, 3p Third Person Plural, 7, 19 Noun Classes, AFF Affirmative, AGR Agreement, C Consonant, CJ Conjoint, COMP Complementizer, DJ Disjoint, F1 Immediate Future Tense, F2 Hodiernal Future Tense, F3 Distant Past Tense, FUT Future, H High Tone, HORT Hortative, IMP Imperative, IND Indicative, IPFV Imperfective, L Low Tone, LTS Low Tone Spread, M Mid Tone, MCA Main Clause Affirmative, N Nasal, NEG Negative, P0 Present/Perfect tense, P1 Immediate Past Tense, P2 Hodiernal Past Tense, P3 Distant Past Tense, PFV Perfective, PL Plural, PRO Pronoun, PROG Progressive, PST Past, SBJV Subjunctive, SG Singular, SM Subject Marker, T Root tone (H or L), TAM Tense Aspect Mood, V Vowel.

²² The reasons for favoring grey to be the default are, first, that it realizes the unmarked feature values “indicative” and “CJ”, and second, that it is morphologically unmarked, being the only pattern not to involve a suffix (cf. Table 6).

²³ Note that the H tone of *di?* from in the F1 suggests a H marker preceding the input verb *di?* ‘be’, thus making it fall into line with the gold subjunctive cells. The F2 and F3 *nè di?* and *lù di?* look like they carry the grey pattern. Thus, while the auxiliary verb shows the expected subjunctive pattern, the main verb shows a different (yellow) one.

Appendix 1. Affirmative indicative verb forms

	1. Perfective (CJ)	2. Perfective (DJ)	3. Progressive	Glosses
P0	L+L-T Bún zhì kǎbáyǎn Bún lám kǎbáyǎn Bún shítǎ kǎbáyǎn Bún sǎhǎtǎ kǎbáyǎn Bún lè kǎbáyǎn Bún kùm kǎbáyǎn Bún shìsǎ kǎbáyǎn Bún límǎsǎ kǎbáyǎn	ǎ+H-T+`lí Bún ǎ zhí ^ǎ lí kǎbáyǎn Bún ǎ lám ^ǎ lí kǎbáyǎn Bún ǎ shítǎ ^ǎ lí kǎbáyǎn Bún ǎ sǎhǎtǎ ^ǎ lí kǎbáyǎn Bún ǎ lè ^ǎ lí kǎbáyǎn Bún ǎ kùm ^ǎ lí kǎbáyǎn Bún ǎ shìsǎ ^ǎ lí kǎbáyǎn Bún ǎ límǎsǎ ^ǎ lí kǎbáyǎn	H+T-ǎ Bún zhí kǎbáyǎn Bún lámǎ kǎbáyǎn Bún shítǎ kǎbáyǎn Bún sǎhǎtǎ kǎbáyǎn Bún lè kǎbáyǎn Bún kùmǎ kǎbáyǎn Bún shìsǎ kǎbáyǎn Bún límǎsǎ kǎbáyǎn	Bung has eaten/is eating fufu ... has cooked/is cooking has collected/is collecting has sifted/is sifting has lost/is losing has touched/is touching has removed/was removing has heated/is heating ...
P1	L+L-T Bún yí zhì kǎbáyǎn Bún yí lám kǎbáyǎn Bún yí shítǎ kǎbáyǎn Bún yí sǎhǎtǎ kǎbáyǎn Bún yí lè kǎbáyǎn Bún yí kùm kǎbáyǎn Bún yí shìsǎ kǎbáyǎn Bún yí límǎsǎ kǎbáyǎn	L+L-T Bún ǎ yí zhì kǎbáyǎn Bún ǎ yí lám kǎbáyǎn Bún ǎ yí shítǎ kǎbáyǎn Bún ǎ yí sǎhǎtǎ kǎbáyǎn Bún ǎ yí lè kǎbáyǎn Bún ǎ yí kùm kǎbáyǎn Bún ǎ yí shìsǎ kǎbáyǎn Bún ǎ yí límǎsǎ kǎbáyǎn	H+T-ǎ Bún yí nzhí kǎbáyǎn Bún yí nlámǎ kǎbáyǎn Bún yí nshítǎ kǎbáyǎn Bún yí nsǎhǎtǎ kǎbáyǎn Bún yí nlè kǎbáyǎn Bún yí nkùmǎ kǎbáyǎn Bún yí nshìsǎ kǎbáyǎn Bún yí nlimǎsǎ kǎbáyǎn	Bung ate/was eating fufu ... cooked/was cooking collected/was collecting sifted/was sifting lost/was losing touched/was touching removed/was removing heated/was heating ...
P2	L+L-T Bún tǎ zhì kǎbáyǎn Bún tǎ lám kǎbáyǎn Bún tǎ shítǎ kǎbáyǎn Bún tǎ sǎhǎtǎ kǎbáyǎn Bún tǎ lè kǎbáyǎn Bún tǎ kùm kǎbáyǎn Bún tǎ shìsǎ kǎbáyǎn Bún tǎ límǎsǎ kǎbáyǎn	L+L-T Bún ǎ tǎ zhì kǎbáyǎn Bún ǎ tǎ lám kǎbáyǎn Bún ǎ tǎ shítǎ kǎbáyǎn Bún ǎ tǎ sǎhǎtǎ kǎbáyǎn Bún ǎ tǎ lè kǎbáyǎn Bún ǎ tǎ kùm kǎbáyǎn Bún ǎ tǎ shìsǎ kǎbáyǎn Bún ǎ tǎ límǎsǎ kǎbáyǎn	H+T-ǎ Bún tǎ nzhí kǎbáyǎn Bún tǎ nlámǎ kǎbáyǎn Bún tǎ nshítǎ kǎbáyǎn Bún tǎ nsǎhǎtǎ kǎbáyǎn Bún tǎ nlè kǎbáyǎn Bún tǎ nkùmǎ kǎbáyǎn Bún tǎ nshìsǎ kǎbáyǎn Bún tǎ nlimǎsǎ kǎbáyǎn	Bung ate/was eating fufu ... cooked/was cooking collected/was collecting sifted/was sifting lost/was losing touched/was touching removed/was removing heated/was heating ...
P3	L+L-ǎ Bún ǎ nzhí kǎbáyǎn Bún ǎ nlám kǎbáyǎn Bún ǎ nshítǎ kǎbáyǎn Bún ǎ nsǎhǎtǎ kǎbáyǎn Bún ǎ nlè kǎbáyǎn Bún ǎ nkùmǎ kǎbáyǎn Bún ǎ nshìsǎ kǎbáyǎn Bún ǎ nlimǎsǎ kǎbáyǎn	ǎ+H-T+`lí Bún ǎ nzhí ^ǎ lí kǎbáyǎn Bún ǎ nlám ^ǎ lí kǎbáyǎn Bún ǎ nshítǎ ^ǎ lí kǎbáyǎn Bún ǎ nsǎhǎtǎ ^ǎ lí kǎbáyǎn Bún ǎ nlè ^ǎ lí kǎbáyǎn Bún ǎ nkùm ^ǎ lí kǎbáyǎn Bún ǎ nshìsǎ ^ǎ lí kǎbáyǎn Bún ǎ nlimǎsǎ ^ǎ lí kǎbáyǎn	H+T-ǎ Bún ǎ nzhí kǎbáyǎn Bún ǎ nlámǎ kǎbáyǎn Bún ǎ nshítǎ kǎbáyǎn Bún ǎ nsǎhǎtǎ kǎbáyǎn Bún ǎ nlè kǎbáyǎn Bún ǎ nkùmǎ kǎbáyǎn Bún ǎ nshìsǎ kǎbáyǎn Bún ǎ nlimǎsǎ kǎbáyǎn	Bung ate/was eating fufu ... cooked/was cooking collected/was collecting sifted/was sifting lost/was losing touched/was touching removed/was removing heated/was heating ...
F1	L+L-T Bún ǎ zhí kǎbáyǎn Bún ǎ lám kǎbáyǎn Bún ǎ shítǎ kǎbáyǎn Bún ǎ sǎhǎtǎ kǎbáyǎn Bún ǎ lè kǎbáyǎn Bún ǎ kùm kǎbáyǎn Bún ǎ shìsǎ kǎbáyǎn Bún ǎ límǎsǎ kǎbáyǎn	L+T-H Bún ǎ ^ǎ zhí kǎbáyǎn Bún ǎ ^ǎ lám kǎbáyǎn Bún ǎ ^ǎ shítǎ kǎbáyǎn Bún ǎ ^ǎ sǎhǎtǎ kǎbáyǎn Bún ǎ ^ǎ lè kǎbáyǎn Bún ǎ ^ǎ kùm kǎbáyǎn Bún ǎ ^ǎ shìsǎ kǎbáyǎn Bún ǎ ^ǎ límǎsǎ kǎbáyǎn	H+T-ǎ Bún ǎ nzhí kǎbáyǎn Bún ǎ nlámǎ kǎbáyǎn Bún ǎ nshítǎ kǎbáyǎn Bún ǎ nsǎhǎtǎ kǎbáyǎn Bún ǎ nlè kǎbáyǎn Bún ǎ nkùmǎ kǎbáyǎn Bún ǎ nshìsǎ kǎbáyǎn Bún ǎ nlimǎsǎ kǎbáyǎn	Bung will eat/be eating fufu ... will cook/be cooking will collect/be collecting will sift/be sifting will lose/be losing will touch/be touching will remove/be removing will heat/be heating ...

F2	L+L-T Bún nè zhì kǎbáyǎn Bún nè lám kǎbáyǎn Bún nè shítǎ kǎbáyǎn Bún nè sǎhǎtǎ kǎbáyǎn Bún nè lè kǎbáyǎn Bún nè kùm kǎbáyǎn Bún nè shisè kǎbáyǎn Bún nè lìmsè kǎbáyǎn	L+T-H Bún é né [˩] zhí kǎbáyǎn Bún é né [˩] lám kǎbáyǎn Bún é né [˩] shítǎ kǎbáyǎn Bún é né [˩] sǎhǎtǎ kǎbáyǎn Bún é né lè kǎbáyǎn Bún é né kùm kǎbáyǎn Bún é né lìmsǎ kǎbáyǎn Bún é né lìmsǎ kǎbáyǎn	H+T-ǎ Bún é né nzhí kǎbáyǎn Bún é né nlámǎ kǎbáyǎn Bún é né nshítǎ kǎbáyǎn Bún é né nsǎhǎtǎ kǎbáyǎn Bún é né nlèè kǎbáyǎn Bún é né ñkùmǎ kǎbáyǎn Bún é né nshisè kǎbáyǎn Bún é né nìmsè kǎbáyǎn	Bung will eat/be eating fufu ... will cook/be cooking will collect/be collecting will sift/be sifting will lose/be losing will touch/be touching will remove/be removing will heat/be heating ...
	L+L-T Bún lù zhì kǎbáyǎn Bún lù lám kǎbáyǎn Bún lù shítǎ kǎbáyǎn Bún lù sǎhǎtǎ kǎbáyǎn Bún lù lè kǎbáyǎn Bún lù kùm kǎbáyǎn Bún lù shisè kǎbáyǎn Bún lù lìmsè kǎbáyǎn	L+T-H Bún é lù [˩] zhí kǎbáyǎn Bún é lù [˩] lám kǎbáyǎn Bún é lù [˩] shítǎ kǎbáyǎn Bún é lù [˩] sǎhǎtǎ kǎbáyǎn Bún é lù lè kǎbáyǎn Bún é lù kùm kǎbáyǎn Bún é lù shisǎ kǎbáyǎn Bún é lù lìmsǎ kǎbáyǎn	H+T-ǎ Bún é lù nzhí kǎbáyǎn Bún é lù nlámǎ kǎbáyǎn Bún é lù nsǎhǎtǎ kǎbáyǎn Bún é lù nshítǎ kǎbáyǎn Bún é lù nlèè kǎbáyǎn Bún é lù ñkùmǎ kǎbáyǎn Bún é lù nshisè kǎbáyǎn Bún é lù nìmsè kǎbáyǎn	Bung will eat/be eating fufu ... will cook/be cooking will collect/be collecting will sift/be sifting will lose/be losing will touch/be touching will remove/be removing will heat/be heating ...

Appendix 2. Negative indicative verb forms

	Perfective NEG	Progressive NEG	Glosses
P0	L+L-T Bún é kó zhì kǎbáyǎn Bún é kó lám kǎbáyǎn Bún é kó shítǎ kǎbáyǎn Bún é kó sǎhǎtǎ kǎbáyǎn Bún é kó lè kǎbáyǎn Bún é kó kùm kǎbáyǎn Bún é kó shisè kǎbáyǎn Bún é kó lìmsè kǎbáyǎn	H+T-ǎ Bún é kó [˩] zhí kǎbáyǎn Bún é kó [˩] lám kǎbáyǎn Bún é kó [˩] shítǎ kǎbáyǎn Bún é kó [˩] sǎhǎtǎ kǎbáyǎn Bún é kó lèè kǎbáyǎn Bún é kó kùmǎ kǎbáyǎn Bún é kó shisè kǎbáyǎn Bún é kó lìmsè kǎbáyǎn	Bung has not eaten/is not eating fufu Bung has not cooked/is not cooking fufu Bung has not collected/is not collecting fufu Bung has not sifted/is not sifting fufu Bung has not lost/is not losing fufu Bung has not touched/is not touching fufu Bung has not remove/is not removing fufu Bung has not heated/is not heating fufu
	L+L-T Bún é kó yì zhì kǎbáyǎn Bún é kó yì lám kǎbáyǎn Bún é kó yì shítǎ kǎbáyǎn Bún é kó yì sǎhǎtǎ kǎbáyǎn Bún é kó yì lè kǎbáyǎn Bún é kó yì kùm kǎbáyǎn Bún é kó yì shisè kǎbáyǎn Bún é kó yì lìmsè kǎbáyǎn	H+T-ǎ Bún é kó yì nzhí kǎbáyǎn Bún é kó yì nlámǎ kǎbáyǎn Bún é kó yì nshítǎ kǎbáyǎn Bún é kó yì nsǎhǎtǎ kǎbáyǎn Bún é kó yì nlèè kǎbáyǎn Bún é kó yì ñkùmǎ kǎbáyǎn Bún é kó yì nshisè kǎbáyǎn Bún é kó yì nìmsè kǎbáyǎn	Bung did not eat/was not eating fufu Bung did not cook/was not cooking fufu Bung did not collect/was not collecting fufu Bung did not sift/was not sifting fufu Bung did not lose/was not losing fufu Bung did not touch/was not touching fufu Bung did not remove/was not removing fufu Bung did not heat/was not heating fufu
	L+L-T Bún é kó tǎ zhì kǎbáyǎn Bún é kó tǎ lám kǎbáyǎn Bún é kó tǎ shítǎ kǎbáyǎn Bún é kó tǎ sǎhǎtǎ kǎbáyǎn Bún é kó tǎ lè kǎbáyǎn Bún é kó tǎ kùm kǎbáyǎn Bún é kó tǎ shisè kǎbáyǎn Bún é kó tǎ lìmsè kǎbáyǎn	H+T-ǎ Bún é kó tǎ nzhí kǎbáyǎn Bún é kó tǎ nlámǎ kǎbáyǎn Bún é kó tǎ nshítǎ kǎbáyǎn Bún é kó tǎ nsǎhǎtǎ kǎbáyǎn Bún é kó tǎ nlèè kǎbáyǎn Bún é kó tǎ ñkùmǎ kǎbáyǎn Bún é kó tǎ nshisè kǎbáyǎn Bún é kó tǎ nìmsè kǎbáyǎn	Bung did not eat/was not eating fufu Bung did not cook/was not cooking fufu Bung did not collect/was not collecting fufu Bung did not sift/was not sifting fufu Bung did not lose/was not losing fufu Bung did not touch/was not touching fufu Bung did not remove/was not removing fufu Bung did not heat/was not heating fufu

P3	/kò/+L-ə Búnj é kó nzhí kəbáyɲ Búnj é kó nlám kəbáyɲ Búnj é kó nshítə kəbáyɲ Búnj é kó nsə́ɲtə kəbáyɲ Búnj é kó nlèè kəbáyɲ Búnj é kó ɲkùmə kəbáyɲ Búnj é kó nshisə́ kəbáyɲ Búnj é kó nlimsə́ kəbáyɲ	H+T-ə Búnj é kó nzhíí kəbáyɲ Búnj é kó nlámó kəbáyɲ Búnj é kó nshítə kəbáyɲ Búnj é kó nsə́ɲtə kəbáyɲ Búnj é kó nlèè kəbáyɲ Búnj é kó ɲkùmə kəbáyɲ Búnj é kó nshisə́ kəbáyɲ Búnj é kó nlimsə́ kəbáyɲ	Bung did not eat/was not eating fufu Bung did not cook/was not cooking fufu Bung did not collect/was not collecting fufu Bung did not sift/was not sifting fufu Bung did not lose/was not losing fufu Bung did not touch/was not touching fufu Bung did not remove/was not removing fufu Bung did not heat/was not heating fufu
	L+T-H Búnj é kó ʰzhí kəbáyɲ Búnj é kó ʰlám kəbáyɲ Búnj é kó ʰshítə kəbáyɲ Búnj é kó ʰsə́ɲtə kəbáyɲ Búnj é kó lè kəbáyɲ Búnj é kó kùm kəbáyɲ Búnj é kó shisə́ kəbáyɲ Búnj é kó limsə́ kəbáyɲ	H+T-ə Búnj é kó nzhíí kəbáyɲ Búnj é kó nlámó kəbáyɲ Búnj é kó nshítə kəbáyɲ Búnj é kó nsə́ɲtə kəbáyɲ Búnj é kó nlèè kəbáyɲ Búnj é kó ɲkùmə kəbáyɲ Búnj é kó nshisə́ kəbáyɲ Búnj é kó nlimsə́ kəbáyɲ	Bung will not eat/be eating fufu Bung will not cook/be cooking fufu Bung will not collect/be collecting fufu Bung will not sift/be sifting fufu Bung will not lose/be losing fufu Bung will not touch/be touching fufu Bung will not remove/be removing fufu Bung will not heat/be heating fufu

Appendix 3. Affirmative imperative singular verb forms

	Perfective	Progressive	Gloss		
F1	L+T-H zhí kəbáyɲ lám kəbáyɲ shítə kəbáyɲ sə́ɲtə kəbáyɲ lèè kəbáyɲ kùmə kəbáyɲ shisə́ kəbáyɲ limsə́ kəbáyɲ	H+T-ə ə nzhíí kəbáyɲ ə nlámó kəbáyɲ ə nshítə kəbáyɲ ə nsə́ɲtə kəbáyɲ ə nlèè kəbáyɲ ə ɲkùmə kəbáyɲ ə nshisə́ kəbáyɲ ə nlimsə́ kəbáyɲ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!		
	F2	L+L-T nè zhí kəbáyɲ nè lám kəbáyɲ nè shítə kəbáyɲ nè sə́ɲtə kəbáyɲ nè lè kəbáyɲ nè kùm kəbáyɲ nè shisə́ kəbáyɲ nè limsə́ kəbáyɲ	H+T-ə né nzhíí kəbáyɲ né nlámó kəbáyɲ né nshítə kəbáyɲ né nsə́ɲtə kəbáyɲ né nlèè kəbáyɲ né ɲkùmə kəbáyɲ né nshisə́ kəbáyɲ né nlimsə́ kəbáyɲ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!	
		F3	L+L-T lù zhí kəbáyɲ lù lám kəbáyɲ lù shítə kəbáyɲ lù sə́ɲtə kəbáyɲ lù lè kəbáyɲ lù kùm kəbáyɲ lù shisə́ kəbáyɲ lù limsə́ kəbáyɲ	H+T-ə lú nzhíí kəbáyɲ lú nlámó kəbáyɲ lú nshítə kəbáyɲ lú nsə́ɲtə kəbáyɲ lú nlèè kəbáyɲ lú ɲkùmə kəbáyɲ lú nshisə́ kəbáyɲ lú nlimsə́ kəbáyɲ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!

Appendix 4. Affirmative imperative plural verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H ghèṅ zhí kǎbáyṅ ghèṅ lám kǎbáyṅ ghèṅ shítǎ kǎbáyṅ ghèṅ sǎṅtǎ kǎbáyṅ ghèṅ lé kǎbáyṅ ghèṅ kúm kǎbáyṅ ghèṅ shí ¹ sǎ kǎbáyṅ ghèṅ lím ¹ sǎ kǎbáyṅ	H+T-L ghèṅ é nzhí kǎbáyṅ ghèṅ é nlámǎ kǎbáyṅ ghèṅ é nshítǎ kǎbáyṅ ghèṅ é nsǎṅtǎ kǎbáyṅ ghèṅ é nlèè kǎbáyṅ ghèṅ é ṅkùmǎ kǎbáyṅ ghèṅ é nshisǎ kǎbáyṅ ghèṅ é nlimsǎ kǎbáyṅ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!
F2	L+L-T ghèṅ nè zhí kǎbáyṅ ghèṅ nè lám kǎbáyṅ ghèṅ nè shítǎ kǎbáyṅ ghèṅ nè sǎṅtǎ kǎbáyṅ ghèṅ nè lè kǎbáyṅ ghèṅ nè kùm kǎbáyṅ ghèṅ nè shisǎ kǎbáyṅ ghèṅ nè limsǎ kǎbáyṅ	H+T-ǎ ghèṅ né nzhí kǎbáyṅ ghèṅ né nlámǎ kǎbáyṅ ghèṅ né nshítǎ kǎbáyṅ ghèṅ né nsǎṅtǎ kǎbáyṅ ghèṅ né nlèè kǎbáyṅ ghèṅ né ṅkùmǎ kǎbáyṅ ghèṅ né nshisǎ kǎbáyṅ ghèṅ né nlimsǎ kǎbáyṅ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!
F3	L+L-T ghèṅ lù zhí kǎbáyṅ ghèṅ lù lám kǎbáyṅ ghèṅ lù shítǎ kǎbáyṅ ghèṅ lù sǎṅtǎ kǎbáyṅ ghèṅ lù lè kǎbáyṅ ghèṅ lù kùm kǎbáyṅ ghèṅ lù shisǎ kǎbáyṅ kǎ ghèṅ lù limsǎ kǎbáyṅ	H+T-ǎ ghèṅ lú nzhí kǎbáyṅ ghèṅ lú nlámǎ kǎbáyṅ ghèṅ lú nshítǎ kǎbáyṅ ghèṅ lú nsǎṅtǎ kǎbáyṅ ghèṅ lú nlèè kǎbáyṅ ghèṅ lú ṅkùmǎ kǎbáyṅ ghèṅ lú nshisǎ kǎbáyṅ ghèṅ lú nlimsǎ kǎbáyṅ	eat/be eating fufu! cook/be cooking fufu! collect/be collecting fufu! sift/be sifting fufu! lose/be losing fufu! touch/be touching fufu! remove/be removing fufu! heat/be heating fufu!

Appendix 5. Affirmative hortative verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H yúwù zhí kǎbáyṅ yúwù lám kǎbáyṅ yúwù shítǎ kǎbáyṅ yúwù sǎṅtǎ kǎbáyṅ yúwù lé kǎbáyṅ yúwù kúm kǎbáyṅ yúwù shí ¹ sǎ kǎbáyṅ yúwù lím ¹ sǎ kǎbáyṅ	H+T-ǎ yúwù é nzhí kǎbáyṅ yúwù é nlámǎ kǎbáyṅ yúwù é nshítǎ kǎbáyṅ yúwù é nsǎṅtǎ kǎbáyṅ yúwù é nlèè kǎbáyṅ yúwù é ṅkùmǎ kǎbáyṅ yúwù é nshisǎ kǎbáyṅ yúwù é nlimsǎ kǎbáyṅ	let's eat/be eating fufu! let's cook/be cooking fufu! let's collect/be collecting fufu! let's sift/be sifting fufu! let's lose/be losing fufu! let's touch/be touching fufu! let's remove/be removing fufu! let's heat/be heating fufu!
F2	L+L-T yúwù nè zhí kǎbáyṅ yúwù nè lám kǎbáyṅ yúwù nè shítǎ kǎbáyṅ yúwù nè sǎṅtǎ kǎbáyṅ yúwù nè lè kǎbáyṅ yúwù nè kùm kǎbáyṅ	H+T-ǎ yúwù né nzhí kǎbáyṅ yúwù né nlámǎ kǎbáyṅ yúwù né nshítǎ kǎbáyṅ yúwù né nsǎṅtǎ kǎbáyṅ yúwù né nlèè kǎbáyṅ yúwù né ṅkùmǎ kǎbáyṅ	let's eat/be eating fufu! let's cook/be cooking fufu! let's collect/be collecting fufu! let's sift/be sifting fufu! let's lose/be losing fufu! let's touch/be touching fufu!

	yúwù nè shìsè kàbáyǎn yúwù nè lím̩sè kàbáyǎn	yúwù né nshìsè kàbáyǎn yúwù né n lím̩sè kàbáyǎn	let's remove/be removing fufu! let's heat/be heating fufu!
F3	L+L-T yúwù lù zhí kàbáyǎn yúwù lù lám kàbáyǎn yúwù lù shító kàbáyǎn yúwù lù sǎh̩tǎ kàbáyǎn yúwù lù lè kàbáyǎn yúwù lù kùm kàbáyǎn yúwù lù shìsè kàbáyǎn kó yúwù lù lím̩sè kàbáyǎn	H+T-ǎ yúwù lú nzhíí kàbáyǎn yúwù lú nlámé kàbáyǎn yúwù lú nshítǎ kàbáyǎn yúwù lú nsǎh̩tǎ kàbáyǎn yúwù lú nlèè kàbáyǎn yúwù lú ñkùmǎ kàbáyǎn yúwù lú nshìsè kàbáyǎn yúwù lú n lím̩sè kàbáyǎn	let's eat/be eating fufu! let's cook/be cooking fufu! let's collect/be collecting fufu! let's sift/be sifting fufu! let's lose/be losing fufu! let's touch/be touching fufu! let's remove/be removing fufu! let's heat/be heating fufu!

Appendix 6. Affirmative subjunctive verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H ... lá yúwù zhí kàbáyǎn ... lá yúwù lám kàbáyǎn ... lá yúwù shító kàbáyǎn ... lá yúwù sǎh̩tǎ kàbáyǎn ... lá yúwù lé kàbáyǎn ... lá yúwù kùm kàbáyǎn ... lá yúwù shí ^l sé kàbáyǎn ... lá yúwù lím ^l sé kàbáyǎn	H+T-ǎ ... lá yúwù ó nzhíí kàbáyǎn ... lá yúwù ó nlámé kàbáyǎn ... lá yúwù ó nshítǎ kàbáyǎn ... lá yúwù ó nsǎh̩tǎ kàbáyǎn ... lá yúwù ó nlèè kàbáyǎn ... lá yúwù ó ñkùmǎ kàbáyǎn ... lá yúwù ó nshìsè kàbáyǎn ... lá yúwù ó n lím̩sè kàbáyǎn	... that we eat fufu! ... that we cook fufu! ... that we collect fufu! ... that we sift fufu! ... that we lose fufu! ... that we touch fufu! ... that we remove fufu! ... that we heat fufu!
F2	L+L-T ... lá yúwù nè zhí kàbáyǎn ... lá yúwù nè lám kàbáyǎn ... lá yúwù nè shító kàbáyǎn ... lá yúwù nè sǎh̩tǎ kàbáyǎn ... lá yúwù nè lè kàbáyǎn ... lá yúwù nè kùm kàbáyǎn ... lá yúwù nè shìsè kàbáyǎn ... lá yúwù nè lím̩sè kàbáyǎn	H+T-ǎ ... lá yúwù né nzhíí kàbáyǎn ... lá yúwù né nlámé kàbáyǎn ... lá yúwù né nshítǎ kàbáyǎn ... lá yúwù né nsǎh̩tǎ kàbáyǎn ... lá yúwù né nlèè kàbáyǎn ... lá yúwù né ñkùmǎ kàbáyǎn ... lá yúwù né nshìsè kàbáyǎn ... lá yúwù né n lím̩sè kàbáyǎn	... that we eat fufu! ... that we cook fufu! ... that we collect fufu! ... that we sift fufu! ... that we lose fufu! ... that we touch fufu! ... that we remove fufu! ... that we heat fufu!
F3	L+L-T ... lá yúwù lù zhí kàbáyǎn ... lá yúwù lù lám kàbáyǎn ... lá yúwù lù shító kàbáyǎn ... lá yúwù lù sǎh̩tǎ kàbáyǎn ... lá yúwù lù lè kàbáyǎn ... lá yúwù lù kùm kàbáyǎn ... lá yúwù lù shìsè kàbáyǎn ... lá yúwù lù lím̩sè kàbáyǎn	H+T-ǎ ... lá yúwù lú nzhíí kàbáyǎn ... lá yúwù lú nlámé kàbáyǎn ... lá yúwù lú nshítǎ kàbáyǎn ... lá yúwù lú nsǎh̩tǎ kàbáyǎn ... lá yúwù lú nlèè kàbáyǎn ... lá yúwù lú ñkùmǎ kàbáyǎn ... lá yúwù lú nshìsè kàbáyǎn ... lá yúwù lú n lím̩sè kàbáyǎn	... that we eat fufu! ... that we cook fufu! ... that we collect fufu! ... that we sift fufu! ... that we lose fufu! ... that we touch fufu! ... that we remove fufu! ... that we heat fufu!

Appendix 7. Affirmative conditional verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H sátsèn Búŋ zhí kàbáyǎn ... sátsèn Búŋ lám kàbáyǎn ... sátsèn Búŋ shító kàbáyǎn ... sátsèn Búŋ sǎh̩tǎ kàbáyǎn ... sátsèn Búŋ lé kàbáyǎn ... sátsèn Búŋ kùm kàbáyǎn ... sátsèn Búŋ shí ^l sé kàbáyǎn ...	H+T-ǎ sátsèn Búŋ ó nzhíí kàbáyǎn ... sátsèn Búŋ ó nlámé kàbáyǎn ... sátsèn Búŋ ó nshítǎ kàbáyǎn ... sátsèn Búŋ ó nsǎh̩tǎ kàbáyǎn ... sátsèn Búŋ ó nlèè kàbáyǎn ... sátsèn Búŋ ó ñkùmǎ kàbáyǎn ... sátsèn Búŋ ó nshìsè kàbáyǎn ...	If Bung eats fufu ...! If Bung cooks fufu ...! If Bung collects fufu ...! If Bung sifts fufu ...! If Bung loses fufu ...! If Bung touches fufu ...! If Bung removes fufu ...!

	sátsèn Bún lím [↓] só kəbáyǎn ...	sátsèn Bún é nlimsə kəbáyǎn ...	If Bung heats fufu ...!
F2	L+L-T sátsèn Bún nè zhí kəbáyǎn ... sátsèn Bún nè lám kəbáyǎn ... sátsèn Bún nè shítə kəbáyǎn ... sátsèn Bún nè səŋtə kəbáyǎn ... sátsèn Bún nè lè kəbáyǎn ... sátsèn Bún nè kùm kəbáyǎn ... sátsèn Bún nè shisə kəbáyǎn ... sátsèn Bún nè limsə kəbáyǎn ...	H+T-ə sátsèn Bún né nzhí kəbáyǎn ... sátsèn Bún né nlámə kəbáyǎn ... sátsèn Bún né nshítə kəbáyǎn ... sátsèn Bún né nsəŋtə kəbáyǎn ... sátsèn Bún né nlè kəbáyǎn ... sátsèn Bún né nkùmə kəbáyǎn ... sátsèn Bún né nshisə kəbáyǎn ... sátsèn Bún né nlimsə kəbáyǎn ...	If Bung eats fufu ...! If Bung cooks fufu ...! If Bung collects fufu ...! If Bung sifts fufu ...! If Bung loses fufu ...! If Bung touches fufu ...! If Bung removes fufu ...! If Bung heats fufu ...!
F3	L+L-T sátsèn Bún lù zhí kəbáyǎn ... sátsèn Bún lù lám kəbáyǎn ... sátsèn Bún lù shítə kəbáyǎn ... sátsèn Bún lù səŋtə kəbáyǎn ... sátsèn Bún lù lè kəbáyǎn ... sátsèn Bún lù kùm kəbáyǎn ... sátsèn Bún lù shisə kəbáyǎn ... sátsèn Bún lù limsə kəbáyǎn ...	H+T-ə sátsèn Bún lú nzhí kəbáyǎn ... sátsèn Bún lú nlámə kəbáyǎn ... sátsèn Bún lú nshítə kəbáyǎn ... sátsèn Bún lú nsəŋtə kəbáyǎn ... sátsèn Bún lú nlè kəbáyǎn ... sátsèn Bún lú nkùmə kəbáyǎn ... sátsèn Bún lú nshisə kəbáyǎn ... sátsèn Bún lú nlimsə kəbáyǎn ...	If Bung eats fufu ...! If Bung cooks fufu ...! If Bung collects fufu ...! If Bung sifts fufu ...! If Bung loses fufu ...! If Bung touches fufu ...! If Bung removes fufu ...! If Bung heats fufu ...!

Appendix 8. Affirmative past conditional verb forms

	Perfective AFF	Progressive AFF	Gloss
P0	L+T-H Bún tí [↓] zhí kəbáyǎn ... Bún tí [↓] lám kəbáyǎn ... Bún tí [↓] shítə kəbáyǎn ... Bún tí [↓] səŋtə kəbáyǎn ... Bún tí lè kəbáyǎn ... Bún tí kùm kəbáyǎn ... Bún tí shisə kəbáyǎn ... Bún tí limsə kəbáyǎn ...	H+T-ə Bún tí nzhí kəbáyǎn ... Bún tí nlámə kəbáyǎn ... Bún tí nshítə kəbáyǎn ... Bún tí nsəŋtə kəbáyǎn ... Bún tí nlè kəbáyǎn ... Bún tí nkùmə kəbáyǎn ... Bún tí nshisə kəbáyǎn ... Bún tí nlimsə kəbáyǎn ...	If Bung had eaten fufu ...! If Bung had cooked fufu ...! If Bung had collected fufu ...! If Bung had sifted fufu ...! If Bung had lost fufu ...! If Bung had touched fufu ...! If Bung had removed fufu ...! If Bung had heated fufu ...!
P1	L+T-H Bún yì tí [↓] zhí kəbáyǎn ... Bún yì tí [↓] lám kəbáyǎn ... Bún yì tí [↓] shítə kəbáyǎn ... Bún yì tí [↓] səŋtə kəbáyǎn ... Bún yì tí lè kəbáyǎn ... Bún yì tí kùm kəbáyǎn ... Bún yì tí shisə kəbáyǎn ... Bún yì tí limsə kəbáyǎn ...	H+T-ə Bún yì tí nzhí kəbáyǎn ... Bún yì tí nlámə kəbáyǎn ... Bún yì tí nshítə kəbáyǎn ... Bún yì tí nsəŋtə kəbáyǎn ... Bún yì tí nlè kəbáyǎn ... Bún yì tí nkùmə kəbáyǎn ... Bún yì tí nshisə kəbáyǎn ... Bún yì tí nlimsə kəbáyǎn ...	If Bung had eaten fufu ...! If Bung had cooked fufu ...! If Bung had collected fufu ...! If Bung had sifted fufu ...! If Bung had lost fufu ...! If Bung had touched fufu ...! If Bung had removed fufu ...! If Bung had heated fufu ...!
P2	L+T-H Bún tətí [↓] zhí kəbáyǎn ... Bún tətí [↓] lám kəbáyǎn ... Bún tətí [↓] shítə kəbáyǎn ... Bún tətí [↓] səŋtə kəbáyǎn ... Bún tətí lè kəbáyǎn ... Bún tətí kùm kəbáyǎn ... Bún tətí shisə kəbáyǎn ... Bún tətí limsə kəbáyǎn ...	H+T-ə Bún tətí nzhí kəbáyǎn ... Bún tətí nlámə kəbáyǎn ... Bún tətí nshítə kəbáyǎn ... Bún tətí nsəŋtə kəbáyǎn ... Bún tətí nlè kəbáyǎn ... Bún tətí nkùmə kəbáyǎn ... Bún tətí nshisə kəbáyǎn ... Bún tətí nlimsə kəbáyǎn ...	If Bung had eaten fufu ...! If Bung had cooked fufu ...! If Bung had collected fufu ...! If Bung had sifted fufu ...! If Bung had lost fufu ...! If Bung had touched fufu ...! If Bung had removed fufu ...! If Bung had heated fufu ...!

P3	L+T-H	H+T-ə	
	Búŋ ə ntí ↓zhí kəbáyŋ ...	Búŋ ə ntí nzhíí kəbáyŋ ...	If Bung had eaten fufu ...!
	Búŋ ə ntí ↓lám kəbáyŋ ...	Búŋ ə ntí nlámó kəbáyŋ ...	If Bung had cooked fufu ...!
	Búŋ ə ntí ↓shító kəbáyŋ ...	Búŋ ə ntí nshítə kəbáyŋ ...	If Bung had collected fufu ...!
	Búŋ ə ntí ↓səŋtə kəbáyŋ ...	Búŋ ə ntí nsəŋtə kəbáyŋ ...	If Bung had sifted fufu ...!
	Búŋ ə ntí lè kəbáyŋ ...	Búŋ ə ntí nlèè kəbáyŋ ...	If Bung had lost fufu ...!
	Búŋ ə ntí kùm kəbáyŋ ...	Búŋ ə ntí ŋkùmə kəbáyŋ ...	If Bung had touched fufu ...!
	Búŋ ə ntí shísó kəbáyŋ ...	Búŋ ə ntí nshisə kəbáyŋ ...	If Bung had removed fufu ...!
Búŋ ə ntí límśó kəbáyŋ ...	Búŋ ə ntí nlimśə kəbáyŋ ...	If Bung had heated fufu ...!	

Appendix 9. Negative imperative singular verb forms

	Perfective	Progressive	Gloss
F1	L+T-H	H+T-ə	
	ká ↓zhí kəbáyŋ	ká nzhíí kəbáyŋ	don't eat/be eating fufu!
	ká ↓lám kəbáyŋ	ká nlámó kəbáyŋ	don't cook/be cooking fufu!
	ká ↓shító kəbáyŋ	ká nshítə kəbáyŋ	don't collect/be collecting fufu!
	ká ↓səŋtə kəbáyŋ	ká nsəŋtə kəbáyŋ	don't sift/be sifting fufu!
	ká lè kəbáyŋ	ká nlèè kəbáyŋ	don't lose/be losing fufu!
	ká kùm kəbáyŋ	ká ŋkùmə kəbáyŋ	don't touch/be touching fufu!
	ká shísó kəbáyŋ	ká nshisə kəbáyŋ	don't remove/be removing fufu!
ká límśó kəbáyŋ	ká nlimśə kəbáyŋ	don't heat/be heating fufu!	
F2	L+T-H	H+T-ə	
	kó né ↓zhí kəbáyŋ	kó né nzhíí kəbáyŋ	don't eat/be eating fufu!
	kó né ↓lám kəbáyŋ	kó né nlámó kəbáyŋ	don't cook/be cooking fufu!
	kó né ↓shító kəbáyŋ	kó né nshítə kəbáyŋ	don't collect/be collecting fufu!
	kó né ↓səŋtə kəbáyŋ	kó né nsəŋtə kəbáyŋ	don't sift/be sifting fufu!
	kó né lè kəbáyŋ	kó né nlèè kəbáyŋ	don't lose/be losing fufu!
	kó né kùm kəbáyŋ	kó né ŋkùmə kəbáyŋ	don't touch/be touching fufu!
	kó né shísó kəbáyŋ	kó né nshisə kəbáyŋ	don't remove/be removing fufu!
kó né límśó kəbáyŋ	kó né nlimśə kəbáyŋ	don't heat/be heating fufu!	
F3	L+T-H	H+T-ə	
	kó lú ↓zhí kəbáyŋ	kó lú nzhíí kəbáyŋ	don't eat/be eating fufu!
	kó lú ↓lám kəbáyŋ	kó lú nlámó kəbáyŋ	don't cook/be cooking fufu!
	kó lú ↓shító kəbáyŋ	kó lú nshítə kəbáyŋ	don't collect/be collecting fufu!
	kó lú ↓səŋtə kəbáyŋ	kó lú nsəŋtə kəbáyŋ	don't sift/be sifting fufu!
	kó lú lè kəbáyŋ	kó lú nlèè kəbáyŋ	don't lose/be losing fufu!
	kó lú kùm kəbáyŋ	kó lú ŋkùmə kəbáyŋ	don't touch/be touching fufu!
	kó lú shísó kəbáyŋ	kó lú nshisə kəbáyŋ	don't remove/be removing fufu!
kó lú límśó kəbáyŋ	kó lú nlimśə kəbáyŋ	don't heat/be heating fufu!	

Appendix 10. Negative imperative plural verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H	H+T-ə	
	kó ghəŋ zhí kəbáyŋ	kó ghəŋ ə nzhíí kəbáyŋ	don't eat/be eating fufu!
	kó ghəŋ lám kəbáyŋ	kó ghəŋ ə nlámó kəbáyŋ	don't cook/be cooking fufu!
	kó ghəŋ shító kəbáyŋ	kó ghəŋ ə nshítə kəbáyŋ	don't collect/be collecting fufu!
	kó ghəŋ səŋtə kəbáyŋ	kó ghəŋ ə nsəŋtə kəbáyŋ	don't sift/be sifting fufu!
	kó ghəŋ lé kəbáyŋ	kó ghəŋ ə nlèè kəbáyŋ	don't lose/be losing fufu!
	kó ghəŋ kùm kəbáyŋ	kó ghəŋ ə ŋkùmə kəbáyŋ	don't touch/be touching fufu!

	ká ghèṅ shí ⁺ só kǎbáyṅ ká ghèṅ lím ⁺ só kǎbáyṅ	ká ghèṅ é nshisè kǎbáyṅ ká ghèṅ é nlimsè kǎbáyṅ	don't remove/be removing fufu! don't heat/be heating fufu!
F2	L+L-T ká ghèṅ nè zhì kǎbáyṅ ká ghèṅ nè lám kǎbáyṅ ká ghèṅ nè shító kǎbáyṅ ká ghèṅ nè sǎṅtǎ kǎbáyṅ ká ghèṅ nè lè kǎbáyṅ ká ghèṅ nè kùm kǎbáyṅ ká ghèṅ nè shisè kǎbáyṅ ká ghèṅ nè limsè kǎbáyṅ	H+T-ǎ ká ghèṅ né nzhí kǎbáyṅ ká ghèṅ né nlámó kǎbáyṅ ká ghèṅ né nshító kǎbáyṅ ká ghèṅ né nsǎṅtǎ kǎbáyṅ ká ghèṅ né nlèè kǎbáyṅ ká ghèṅ né ṅkùmè kǎbáyṅ ká ghèṅ né nshisè kǎbáyṅ ká ghèṅ né nlimsè kǎbáyṅ	don't eat/be eating fufu! don't cook/be cooking fufu! don't collect/be collecting fufu! don't sift/be sifting fufu! don't lose/be losing fufu! don't touch/be touching fufu! don't remove/be removing fufu! don't heat/be heating fufu!
F3	L+L-T ká ghèṅ lù zhì kǎbáyṅ ká ghèṅ lù lám kǎbáyṅ ká ghèṅ lù shító kǎbáyṅ ká ghèṅ lù sǎṅtǎ kǎbáyṅ ká ghèṅ lù lè kǎbáyṅ ká ghèṅ lù kùm kǎbáyṅ ká ghèṅ lù shisè kǎbáyṅ ká ghèṅ lù limsè kǎbáyṅ	H+T-ǎ ká ghèṅ lù nzhí kǎbáyṅ ká ghèṅ lù nlámó kǎbáyṅ ká ghèṅ lù nshító kǎbáyṅ ká ghèṅ lù nsǎṅtǎ kǎbáyṅ ká ghèṅ lù nlèè kǎbáyṅ ká ghèṅ lù ṅkùmè kǎbáyṅ ká ghèṅ lù nshisè kǎbáyṅ ká ghèṅ lù nlimsè kǎbáyṅ	don't eat/be eating fufu! don't cook/be cooking fufu! don't collect/be collecting fufu! don't sift/be sifting fufu! don't lose/be losing fufu! don't touch/be touching fufu! don't remove/be removing fufu! don't heat/be heating fufu!

Appendix 11. Negative hortative verb forms

	Perfective AFF	Progressive AFF	Gloss
F1	H+T-H ká yúwù zhì kǎbáyṅ ká yúwù lám kǎbáyṅ ká yúwù shító kǎbáyṅ ká yúwù sǎṅtǎ kǎbáyṅ ká yúwù lé kǎbáyṅ ká yúwù kùm kǎbáyṅ ká yúwù shí ⁺ só kǎbáyṅ ká yúwù lím ⁺ só kǎbáyṅ	H+T-ǎ ká yúwù é nzhí kǎbáyṅ ká yúwù é nlámó kǎbáyṅ ká yúwù é nshító kǎbáyṅ ká yúwù é nsǎṅtǎ kǎbáyṅ ká yúwù é nlèè kǎbáyṅ ká yúwù é ṅkùmè kǎbáyṅ ká yúwù é nshisè kǎbáyṅ ká yúwù é nlimsè kǎbáyṅ	let's not eat/be eating fufu! let's not cook/be cooking fufu! let's not collect/be collecting fufu! let's not sift/be sifting fufu! let's not lose/be losing fufu! let's not touch/be touching fufu! let's not remove/be removing fufu! let's not heat/be heating fufu!
F2	L+L-T ká yúwù nè zhì kǎbáyṅ ká yúwù nè lám kǎbáyṅ ká yúwù nè shító kǎbáyṅ ká yúwù nè sǎṅtǎ kǎbáyṅ ká yúwù nè lè kǎbáyṅ ká yúwù nè kùm kǎbáyṅ ká yúwù nè shisè kǎbáyṅ ká yúwù nè limsè kǎbáyṅ	H+T-ǎ ká yúwù né nzhí kǎbáyṅ ká yúwù né nlámó kǎbáyṅ ká yúwù né nshító kǎbáyṅ ká yúwù né nsǎṅtǎ kǎbáyṅ ká yúwù né nlèè kǎbáyṅ ká yúwù né ṅkùmè kǎbáyṅ ká yúwù né nshisè kǎbáyṅ ká yúwù né nlimsè kǎbáyṅ	let's not eat/be eating fufu! let's not cook/be cooking fufu! let's not collect/be collecting fufu! let's not sift/be sifting fufu! let's not lose/be losing fufu! let's not touch/be touching fufu! let's not remove/be removing fufu! let's not heat/be heating fufu!
F3	L+L-T ká yúwù lù zhì kǎbáyṅ ká yúwù lù lám kǎbáyṅ ká yúwù lù shító kǎbáyṅ ká yúwù lù sǎṅtǎ kǎbáyṅ ká yúwù lù lè kǎbáyṅ ká yúwù lù kùm kǎbáyṅ ká yúwù lù shisè kǎbáyṅ ká yúwù lù limsè kǎbáyṅ	H+T-ǎ ká yúwù lù nzhí kǎbáyṅ ká yúwù lù nlámó kǎbáyṅ ká yúwù lù nshító kǎbáyṅ ká yúwù lù nsǎṅtǎ kǎbáyṅ ká yúwù lù nlèè kǎbáyṅ ká yúwù lù ṅkùmè kǎbáyṅ ká yúwù lù nshisè kǎbáyṅ ká ghèṅ lù nlimsè kǎbáyṅ	let's not eat/be eating fufu! let's not cook/be cooking fufu! let's not collect/be collecting fufu! let's not sift/be sifting fufu! let's not lose/be losing fufu! let's not touch/be touching fufu! let's not remove/be removing fufu! let's not heat/be heating fufu!

Appendix 12. Negative subjunctive verb forms

	Perfective AFF	Progressive AFF	Gloss		
F1	H+T-H ... lá ká yúwù zhí kǎbáyǎn ... lá ká yúwù lám kǎbáyǎn ... lá ká yúwù shító kǎbáyǎn ... lá ká yúwù sǎhǎtǎ kǎbáyǎn ... lá ká yúwù lé kǎbáyǎn ... lá ká yúwù kúm kǎbáyǎn ... lá ká yúwù shí ⁴ sǎ kǎbáyǎn ... lá ká yúwù lím ⁴ sǎ kǎbáyǎn	H+T-ǎ ... lá ká yúwù ǎ nzhí kǎbáyǎn ... lá ká yúwù ǎ nlámǎ kǎbáyǎn ... lá ká yúwù ǎ nshítǎ kǎbáyǎn ... lá ká yúwù ǎ nsǎhǎtǎ kǎbáyǎn ... lá ká yúwù ǎ nlèè kǎbáyǎn ... lá ká yúwù ǎ hǎkúmǎ kǎbáyǎn ... lá ká yúwù ǎ nshisǎ kǎbáyǎn ... lá ká yúwù ǎ nlimsǎ kǎbáyǎn	... that we not eat fufu! ... that we not cook that we not collect that we not sift that we not lose that we not touch that we not remove that we not heat ...		
	F2	L+L-T ... lá ká yúwù nè zhí kǎbáyǎn ... lá ká yúwù nè lám kǎbáyǎn ... lá ká yúwù nè shító kǎbáyǎn ... lá ká yúwù nè sǎhǎtǎ kǎbáyǎn ... lá ká yúwù nè lè kǎbáyǎn ... lá ká yúwù nè kúm kǎbáyǎn ... lá ká yúwù nè shisǎ kǎbáyǎn ... lá ká yúwù nè limsǎ kǎbáyǎn	H+T-ǎ ... lá ká yúwù né nzhí kǎbáyǎn ... lá ká yúwù né nlámǎ kǎbáyǎn ... lá ká yúwù né nshítǎ kǎbáyǎn ... lá ká yúwù né nsǎhǎtǎ kǎbáyǎn ... lá ká yúwù né nlèè kǎbáyǎn ... lá ká yúwù né hǎkúmǎ kǎbáyǎn ... lá ká yúwù né nshisǎ kǎbáyǎn ... lá ká yúwù né nlimsǎ kǎbáyǎn	... that we not eat fufu! ... that we not cook that we not collect that we not sift that we not lose that we not touch that we not remove that we not heat ...	
		F3	L+L-T ... lá ká yúwù lù zhí kǎbáyǎn ... lá ká yúwù lù lám kǎbáyǎn ... lá ká yúwù lù shító kǎbáyǎn ... lá ká yúwù lù sǎhǎtǎ kǎbáyǎn ... lá ká yúwù lù lè kǎbáyǎn ... lá ká yúwù lù kúm kǎbáyǎn ... lá ká yúwù lù shisǎ kǎbáyǎn ... lá ká yúwù lù limsǎ kǎbáyǎn	H+T-ǎ ... lá ká yúwù lú nzhí kǎbáyǎn ... lá ká yúwù lú nlámǎ kǎbáyǎn ... lá ká yúwù lú nshítǎ kǎbáyǎn ... lá ká yúwù lú nsǎhǎtǎ kǎbáyǎn ... lá ká yúwù lú nlèè kǎbáyǎn ... lá ká yúwù lú hǎkúmǎ kǎbáyǎn ... lá ká yúwù lú nshisǎ kǎbáyǎn ... lá ká yúwù lú nlimsǎ kǎbáyǎn	... that we not eat fufu! ... that we not cook that we not collect that we not sift that we not lose that we not touch that we not remove that we not heat ...

Appendix 13. Negative future conditional verb forms

	Perfective AFF	Progressive AFF	Gloss	
F1	L+T-H sǎtsèn Búŋ dí? ká zhí kǎbáyǎn sǎtsèn Búŋ dí? ká lám kǎbáyǎn sǎtsèn Búŋ dí? ká shító kǎbáyǎn sǎtsèn Búŋ dí? ká sǎhǎtǎ kǎbáyǎn sǎtsèn Búŋ dí? ká lè kǎbáyǎn sǎtsèn Búŋ dí? ká kúm kǎbáyǎn sǎtsèn Búŋ dí? ká shisǎ kǎbáyǎn sǎtsèn Búŋ dí? ká limsǎ kǎbáyǎn	H+T-ǎ sǎtsèn Búŋ dí? ká nzhí kǎbáyǎn sǎtsèn Búŋ dí? ká nlámǎ kǎbáyǎn sǎtsèn Búŋ dí? ká nshítǎ kǎbáyǎn sǎtsèn Búŋ dí? ká nsǎhǎtǎ kǎbáyǎn sǎtsèn Búŋ dí? ká nlèè kǎbáyǎn sǎtsèn Búŋ dí? ká hǎkúmǎ kǎbáyǎn sǎtsèn Búŋ dí? ká nshisǎ kǎbáyǎn sǎtsèn Búŋ dí? ká nlimsǎ kǎbáyǎn	If Bung doesn't eat fufu ... If Bung doesn't cook fufu ... If Bung doesn't collect fufu ... If Bung doesn't sift fufu ... If Bung doesn't lose fufu ... If Bung doesn't touch fufu ... If Bung doesn't remove fufu ... If Bung doesn't heat fufu ...	
	F2	L+T-H sǎtsèn Búŋ nè dí? ká zhí kǎbáyǎn sǎtsèn Búŋ nè dí? ká lám kǎbáyǎn sǎtsèn Búŋ nè dí? ká shító kǎbáyǎn sǎtsèn Búŋ nè dí? ká sǎhǎtǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká lè kǎbáyǎn sǎtsèn Búŋ nè dí? ká kúm kǎbáyǎn sǎtsèn Búŋ nè dí? ká shisǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká limsǎ kǎbáyǎn	H+T-ǎ sǎtsèn Búŋ nè dí? ká nzhí kǎbáyǎn sǎtsèn Búŋ nè dí? ká nlámǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká nshítǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká nsǎhǎtǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká nlèè kǎbáyǎn sǎtsèn Búŋ nè dí? ká hǎkúmǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká nshisǎ kǎbáyǎn sǎtsèn Búŋ nè dí? ká nlimsǎ kǎbáyǎn	If Bung doesn't eat fufu ... If Bung doesn't cook fufu ... If Bung doesn't collect fufu ... If Bung doesn't sift fufu ... If Bung doesn't lose fufu ... If Bung doesn't touch fufu ... If Bung doesn't remove fufu ... If Bung doesn't heat fufu ...

F3	L+T-H sátsèn Búnj lù di? kó zhí kə́báyn sátsèn Búnj lù di? kó lám kə́báyn sátsèn Búnj lù di? kó shítə́ kə́báyn sátsèn Búnj lù di? kó sǎ́ntə́ kə́báyn sátsèn Búnj lù di? kó lè kə́báyn sátsèn Búnj lù di? kó kùm kə́báyn sátsèn Búnj lù di? kó shisə́ kə́báyn sátsèn Búnj lù di? kó límśə́ kə́báyn	H+T-ə́ sátsèn Búnj lù di? kó nzhí́ kə́báyn sátsèn Búnj lù di? kó nlámə́ kə́báyn sátsèn Búnj lù di? kó nshítə́ kə́báyn sátsèn Búnj lù di? kó nsǎ́ntə́ kə́báyn sátsèn Búnj lù di? kó nlèè kə́báyn sátsèn Búnj lù di? kó ŋkùmə́ kə́báyn sátsèn Búnj lù di? kó nshisə́ kə́báyn sátsèn Búnj lù di? kó nlimśə́ kə́báyn	If Bung doesn't eat fufu ... If Bung doesn't cook fufu ... If Bung doesn't collect fufu ... If Bung doesn't sift fufu ... If Bung doesn't lose fufu ... If Bung doesn't touch fufu ... If Bung doesn't remove fufu ... If Bung doesn't heat fufu ...
----	--	---	---

Appendix 14. Negative past conditional verb forms

	Perfective AFF	Progressive AFF	Gloss			
P0	L+T-H Búnj tí di? kó ʰzhí kə́báyn ... Búnj tí di? kó ʰlám kə́báyn ... Búnj tí di? kó ʰshítə́ kə́báyn ... Búnj tí di? kó ʰsǎ́ntə́ kə́báyn ... Búnj tí di? kó lè kə́báyn ... Búnj tí di? kó kùm kə́báyn ... Búnj tí di? kó shisə́ kə́báyn ... Búnj tí di? kó límśə́ kə́báyn ...	H+T-ə́ Búnj tí di? kó nzhí́ kə́báyn ... Búnj tí di? kó nlámə́ kə́báyn ... Búnj tí di? kó nshítə́ kə́báyn ... Búnj tí di? kó nsǎ́ntə́ kə́báyn ... Búnj tí di? kó nlèè kə́báyn ... Búnj tí di? kó ŋkùmə́ kə́báyn ... Búnj tí di? kó nshisə́ kə́báyn ... Búnj tí di? kó nlimśə́ kə́báyn ...	If Bung hadn't eaten fufu ...! If Bung hadn't cooked fufu ...! If Bung hadn't collected fufu ...! If Bung hadn't sifted fufu ...! If Bung hadn't lost fufu ...! If Bung hadn't touched fufu ...! If Bung hadn't removed fufu ...! If Bung hadn't heated fufu ...!			
	P1	L+T-H Búnj yí tí di? kó ʰzhí kə́báyn ... Búnj yí tí di? kó ʰlám kə́báyn ... Búnj yí tí di? kó ʰshítə́ kə́báyn ... Búnj yí tí di? kó ʰsǎ́ntə́ kə́báyn ... Búnj yí tí di? kó lè kə́báyn ... Búnj yí tí di? kó kùm kə́báyn ... Búnj yí tí di? kó shisə́ kə́báyn ... Búnj yí tí di? kó límśə́ kə́báyn ...	H+T-ə́ Búnj yí tí di? kó nzhí́ kə́báyn ... Búnj yí tí di? kó nlámə́ kə́báyn ... Búnj yí tí di? kó nshítə́ kə́báyn ... Búnj yí tí di? kó nsǎ́ntə́ kə́báyn ... Búnj yí tí di? kó nlèè kə́báyn ... Búnj yí tí di? kó ŋkùmə́ kə́báyn ... Búnj yí tí di? kó nshisə́ kə́báyn ... Búnj yí tí di? kó nlimśə́ kə́báyn ...	If Bung hadn't eaten fufu ...! If Bung hadn't cooked fufu ...! If Bung hadn't collected fufu ...! If Bung hadn't sifted fufu ...! If Bung hadn't lost fufu ...! If Bung hadn't touched fufu ...! If Bung hadn't removed fufu ...! If Bung hadn't heated fufu ...!		
		P2	L+T-H Búnj tə́ tí di? kó ʰzhí kə́báyn ... Búnj tə́ tí di? kó ʰlám kə́báyn ... Búnj tə́ tí di? kó ʰshítə́ kə́báyn ... Búnj tə́ tí di? kó ʰsǎ́ntə́ kə́báyn ... Búnj tə́ tí di? kó lè kə́báyn ... Búnj tə́ tí di? kó kùm kə́báyn ... Búnj tə́ tí di? kó shisə́ kə́báyn ... Búnj tə́ tí di? kó límśə́ kə́báyn ...	H+T-ə́ Búnj tə́ tí di? kó nzhí́ kə́báyn ... Búnj tə́ tí di? kó nlámə́ kə́báyn ... Búnj tə́ tí di? kó nshítə́ kə́báyn ... Búnj tə́ tí di? kó nsǎ́ntə́ kə́báyn ... Búnj tə́ tí di? kó nlèè kə́báyn ... Búnj tə́ tí di? kó ŋkùmə́ kə́báyn ... Búnj tə́ tí di? kó nshisə́ kə́báyn ... Búnj tə́ tí di? kó nlimśə́ kə́báyn ...	If Bung hadn't eaten fufu ...! If Bung hadn't cooked fufu ...! If Bung hadn't collected fufu ...! If Bung hadn't sifted fufu ...! If Bung hadn't lost fufu ...! If Bung hadn't touched fufu ...! If Bung hadn't removed fufu ...! If Bung hadn't heated fufu ...!	
			P3	L+T-H Búnj ə́ ntí di? kó ʰzhí kə́báyn ... Búnj ə́ ntí di? kó ʰlám kə́báyn ... Búnj ə́ ntí di? kó ʰshítə́ kə́báyn ... Búnj ə́ ntí di? kó ʰsǎ́ntə́ kə́báyn ... Búnj ə́ ntí di? kó lè kə́báyn ... Búnj ə́ ntí di? kó kùm kə́báyn ... Búnj ə́ ntí di? kó shisə́ kə́báyn ... Búnj ə́ ntí di? kó límśə́ kə́báyn ...	H+T-ə́ Búnj ə́ ntí di? kó nzhí́ kə́báyn ... Búnj ə́ ntí di? kó nlámə́ kə́báyn ... Búnj ə́ ntí di? kó nshítə́ kə́báyn ... Búnj ə́ ntí di? kó nsǎ́ntə́ kə́báyn ... Búnj ə́ ntí di? kó nlèè kə́báyn ... Búnj ə́ ntí di? kó ŋkùmə́ kə́báyn ... Búnj ə́ ntí di? kó nshisə́ kə́báyn ... Búnj ə́ ntí di? kó nlimśə́ kə́báyn ...	If Bung hadn't eaten fufu ...! If Bung hadn't cooked fufu ...! If Bung hadn't collected fufu ...! If Bung hadn't sifted fufu ...! If Bung hadn't lost fufu ...! If Bung hadn't touched fufu ...! If Bung hadn't removed fufu ...! If Bung hadn't heated fufu ...!

References

- Akumbu, Pius W. 2008. *Kejom (Babanki)-English lexicon*. Köln: Rüdiger Köppe Verlag.
- Akumbu, Pius W. 2011. Tone in Kejom (Babanki) associative constructions. *Journal of West African Languages* 38(1). 69–88.
- Akumbu, Pius W. 2015. Babanki verb tone. *Studies in African Linguistics* 44(1). 2–26.
- Akumbu, Pius W. 2016. Babanki coda consonant deletion and vowel raising: A case of allomorphy. *Berkeley Linguistics Society (BLS)* 42. 3–20.
- Akumbu, Pius W. 2019. A featural analysis of mid and downstepped high tone in Babanki. In Emily Clem, Peter Jenks & Hannah Sande (eds.), *Theory and description in African linguistics: Selected papers from the 47th Annual Conference on African Linguistics*. 3–20. Berlin: Language Science Press.
- Akumbu, Pius W. & Evelyn Fogwe Chibaka. 2012. *A pedagogic grammar of Babanki*. Köln: Rüdiger Köppe Verlag.
- Akumbu, Pius W. & Larry M. Hyman. 2017. Nasals and low tone in Grassfields noun class prefixes. *Nordic Journal of African Studies* 26(1). 1–13.
- Anderson, Stephen C. 1979. Verb structure. In Larry M. Hyman (ed.), *Aghem grammatical structure*. 73–136. Los Angeles: Department of Linguistics, University of Southern California.
- Chie, Esther P. 2014. *The phrasal phonology of Gá?á Kàdžòm (Babanki): An outgrowth of the other components of the grammar of the Language*. Yaoundé, CR: University of Yaoundé I dissertation.
- Hyman, Larry M. 1979. Tonology of the Babanki noun. *Studies in African Linguistics* 10. 159–178.
- Hyman, Larry M. 1980. Babanki and the Ring group. In Larry M. Hyman & Jan Voorhoeve (eds.), *Noun classes in Grassfields Bantu*. 225–258. Paris: SELAF.
- Hyman, Larry M. 2016. Morphological tonal assignments in conflict: Who wins? In Enrique Palancar & Jean Léo Léonard (eds.), *Tone and inflection: New facts and new perspectives*. 15–39. Berlin/Boston: De Gruyter Mouton.
- Hyman, Larry M. 2018. Common Bantoid verb extensions. In John R. Watters (ed.), *East Benue-Congo: Nouns, pronouns, and verbs*. 173–198. Berlin: Language Science Press.
- Hyman, Larry M. & John R. Watters. 1984. Auxiliary focus. *Studies in African Linguistics* 15. 233–273.
- Inkelas, Sharon. 2011. The interaction between morphology and phonology. In John A. Goldsmith, Jason Riggle & Alan C. L. Yu (eds.), *Handbook of phonological theory*, 2nd edition. 68–102. Hoboken, NJ: Wiley-Blackwell.
- Inkelas, Sharon & Cheryl Zoll. 2007. Is grammar dependence real? A comparison between cophological and indexical approaches to morphologically conditioned phonology. *Linguistics* 45. 133–171.
- Meeussen, A. E. 1967. Bantu grammatical reconstructions. *Africana Linguistica* 3. 79–121. Tervuren: Musée Royal de l’Afrique Centrale.
- Mutaka, Ngessimo M. & Esther Phubon Chie. 2006. Vowel raising in Babanki. *Journal of West African Languages* 33. 71–88.
- Van der Wal, Jenneke & Larry M. Hyman (eds.). 2017. *The conjoint/disjoint alternation in Bantu*. Berlin: De Gruyter Mouton.
- Watters, John Robert. 1979. Focus in Aghem: A study of its formal correlates and typology. In Larry M. Hyman (ed.), *Aghem grammatical structure*. 137–197. Los Angeles: Department of Linguistics, University of Southern California.

Pius W. Akumbu
 Department of Linguistics
 University of Buea
 P.O Box 63
 Buea, Cameroon
akumbu.pius@ubuea.cm

Larry M. Hyman
 Department of Linguistics
 1203 Dwinelle, MC 2650
 University of California
 Berkeley, CA 94720-2650
hyman@berkeley.edu

Roland Kießling
 Department of Asia-Africa Studies
 Universität Hamburg
 Edmund-Siemers-Allee 1
 20146 Hamburg, Germany
roland.kiessling@uni-hamburg.de