THOT THEORY OF TONE

Valentin Vydrin

Bambara. Analytical report on the tonal system (version 2.0)

10.5281/zenodo.14881230

On the basis of the Version 8b of the Questionnary

1. General information about the language

1.1. Language name

Bambara is the name used by neighboring ethnic groups (Soninke, Maninka, Fulbe, etc.). The autolinguonym is *Bámanankan.* ISO-639: bam; the Glottolog code: bamb1269.

1.2. Genetic affiliation

Bambara belongs to the Manding group (< Western Mande < Mande < Niger-Congo). It is spoken mainly in Mali (West Africa) by some 5 million L1 speakers and about 12-13 million L2 speakers.

1.3. Dialects

In this study, the tonal system of the so-called Standard Bambara (based on the dialect of Bamako, the capital of Mali) is presented. Otherwise, Bambara has numerous dialects, some of these manifest certain differences from the Standard Bambara with respect to the tonal realization (in particular, tonal spread overlapping word boundaries in the Segu dialect). Particularities of non-standard Bambara dialects will not be considered here.

2. Segmental phonology

2.1. Phonemic inventory

2.1.1. Vowels

i i: ĩ		u u: ũ
e e: ẽ		o o: õ
ɛ ɛ: ɛ̃		ɔ ɔ: ɔ̃
	a a: ã	
	N	

Table 1. Vowels

Long and short vowels are contrastive only in the initial syllable of a disyllabic foot: *sére* ‘frequent pregnancies’ vs. *sé:re* ‘witness’, *bára* ‘dancing ground’ vs. *bá:ra* ‘work’.

In monosyllabic feet, phonetically long vowels can appear as a result of elision of an intervocalic consonant (most often, a velar consonant; occasionally, others): *dàga ~ dàa* ‘pot’, *fàga ~ fàa* ‘kill’, *kɔ̀ro ~ kɔ̀ɔ* ‘elder’. They are interpreted as combinations of two short vowels (rather than as long vocalic phonemes): *dà.a, fà.a, kɔ̀.ɔ.*

The syllabic nasal designated by *N* appears, in particular, as the exponent of the 1SG pronoun of the light series *ń,* and also, in some compounds, e.g. *bɔ́Ńnɔ* ‘expenditure’.

Quality of the Bambara vowels produces no effect on tonal realizations.

2.1.2. Consonants

	Labial	Alveolar	Palatal	Velar	Velar labialized
Unvoiced prenasal stops	mp	nt	nʧ	ŋk	
Voiced prenasalized stops	mb	nd	nʤ	ŋg	
Prenasalized fricatives	mf	ns			
Unvoiced stops	p	t	ʧ	k	
Voiced stops	b	d	ʤ	g	gw
Unvoiced fricatives	f	s	(ʃ)	h	
Voiced fricatives		z			
Oral sonants	w	l	j		
Nasal sonants	m	n	ɲ	ŋ	

Table 2. Foot-initial consonants

	Labial	Alveolar	Palatal	Velar
Unvoiced prenasal stops	mp	nt		ŋk
Voiced prenasal stops	mb		nʤ	ŋg
Prenasal fricatives	mf	ns		
Voiced stops	b	(d)		g
Unvoiced fricatives	f	s		
Oral sonants	(w)	l	j	
Vibrant		t		
Nasal sonants	m	n	ɲ	

Table 3. Foot-internal consonants

The phonological contrast between voiced and unvoiced prenasalized stops is weak (and it seems to lack in many Bambara dialects, in particular, in the Segu dialect), although still relevant in the Standard Bambara: *ngɔ̀* 'baboon' vs. *nkɔ̀* 'target'; *npíri* 'champion' vs. *nbíli* 'ephemera termite', *ntólo* 'completely' vs. *ndóro* 'very acid'. In the foot-internal position, this contrast is even less relevant.

Gw and *ʃ* are marginal foot-initial phonemes. *Gw* is often replaced by *g* by many speakers of Bambara (it seems to be more stable in some words than in some others). *ʃ* is an allophone of /s/ in most cases (especially in some non-standard varieties of Bambara), it appears invariably only in a limited number of words (*ʃɛ̂* 'chicken', *ʃɔ̂* 'beans', *ʃù* 'cabbage').

G in the foot-internal position has allophones *g, k, ɣ, Ø* (i.e., it can be optionally elided).

Z is a free variant of /ns/, but it appears more or less invariably in numerous French loans and can be therefore considered a separate phoneme.

R does not appear in the foot-initial position. *L* is very frequent in the foot-internal position, and much less so at the beginning of a foot (where it appears mainly in Arabic, French and Maninka loans).

Bambara consonants do not exert a tone depressor effect.

2.2. Prosodic units

2.2.1. Syllable

The quasi-universal syllabic structure in Bambara is CV. V syllables appear only in pronouns, in the initial position of some loans and in personal names (of foreign origin). They

can be found, optionally, in foot-final position resulting from the elision of foot-internal consonants, e.g. *sà.a* ‘sheep’. CVC syllables may appear in some rare expressive adverbs. CVC syllables can be maintained in some French loans, although, as a rule, epenthetic vowels are inserted to avoid violation of the open syllable rule, e.g.: *fíleru* ‘flower’ (< French *fleur*), *dɔ̀gɔtɔrɔ* ‘medical doctor’ (< French *docteur*).

Arguments for the syllable as a TBU

In Bambara there is a phonological vowel length contrast and, therefore, a syllabic weight contrast, CV vs. CV: (closed syllables are disallowed). However, the length contrast is relevant only in the first syllable of a disyllabic featural foot (CV:CV vs. CVCV, but not *CVCV: vs. CVCV; a word can contain more than one foot). In the foot-final position, light and heavy syllables are not contrasted: as a rule, a foot-final syllable can be realised with a long vowel, but this vowel length is not phonological (Vydrin 2020a; Vydrin 2020b). When two different tones are mapped to one syllable, its vowel is realized as long, e.g. [sògóò] <animal\ART>; even three tones can be carried by a single syllable, in which case its vowel is extra-long, e.g. [sàáà] <snake\ART>. However, when the same syllable appears in a position other than word-final and does not carry a tonal contour, the same syllable is realized with a short vowel: [sògò-báà] <animal-big\ART>, [sà-báà] <snake-big\ART>.

In Bambara, syllables with phonologically contrastive long vowels (i.e., heavy syllables) occur only in non-final position and therefore cannot bear contour tones (which are attested, almost exclusively, in word-final position). And word-final syllables, which can bear contour tones, are neutral with respect to syllabic weight. It can be concluded that the distinction between light and heavy syllables have no incidence on tone. Therefore, in Bambara, syllable (rather than mora) is the TBU.

2.2.2. Prosodic foot

In Bambara, a prosodic foot can be postulated (Vydrin 2020a). It can be monosyllabic (CV, rarely V) or disyllabic (CVCV). A disyllabic foot is characterized by the following features:

– asymmetry between the subsystems of foot-initial and foot-internal consonants, see §2.1.2;

– restrictions in the inventory of vocalic combinations in disyllabic feet;

– feet boundaries have incidence on tonal realizations. In particular, when the tonal span of a low toneme consists of two feet, realization of its LH allotone depends on the localization of the foot boundary. E.g., *bànfula*` [L bə̀|fúlá][L `] ‘hat\ART’, but *tàmaki*` [L tàmà|kí][L `] ‘hesitation\ART’ (the vertical bar stands for the feet boundary).

In Bambara, a foot cannot comprise more than one morpheme.

2.3. The orthography and conventions

In what follows, the official Bambara orthography of Mali is used (Anonyme 1993; Vydrin 2022). It follows IPA in main lines, with some particularities:

– ʤ is designated by *j,* ʧ by *c,* ʃ by *sh*, j by *y*;

– long vowels are designated by double letters;

– the nasality of vowels is marked by the letter *n* following the vowel: *dén* /dɛ̃́/ ‘child’, *fàn* /fə̀̃/ ‘side’.

By default, tonal diacritics are placed on the initial syllables of the tonal spans (therefore, an absence of tonal diacritics on a vowel means that this syllable belongs to the same tonal span as the preceding syllable). The floating low tone is designated by a gravis without support letter: *kólo*` ‘bone\ART’. When it is necessary to display tonal realizations on each syllable, the word or phrase is given in [square brackets]. Glossed examples are represented in four lines:

1) The superficial phonetic realization.

2) The underlying phonological realization.

3) Glosses.
4) Free translation.

3. Tones and toneme inventory

3.1. Character of tones

Bambara has a level-tone system.

3.1.1. Number of levels

Bambara has two level tones, H and L.

3.1.2. Contours hosted by one TBU

In Bambara, TBU is a syllable (see §2.2.1). Contours LH, HL and LHL can be hosted on one syllable.

3.2. Inventory of tonemes

Bambara has two tonemes, low and high. The low toneme has two allotones: [L] (if followed by a H or a pause) and [LH] (if followed by another L toneme).[1] The allotone [LH] is conditioned by the Obligatory Contour Principle (OCP).

The tonemic status of L is endorsed by the following criteria:

– the Floating Criterion, see §3.3;

– the Shared TBU criterion: L can be part of a contour on a single TBU, see §3.1.2 and §2.2.1. E.g.: *sà* ` [sǎ`] ‘snake\ART’, *tá* ` [tâ] ‘fire\ART’;

– the Activity Criterion: L can spread to the right, see §6.1.2, §6.1.3.

– the Tonal Morpheme Criterion: (1) a floating L tone appears as a specific article, see §7.1.1; (2) there is a replacive tonal morpheme L, marker of nominalization of morphologically complex verbs, e.g. *lá-bèn* <CAUS-meet> ‘prepare’ → *làbɛn* ‘preparation’, see §7.1.2;

– the Extensibility Criterion: the allophone LH can be hosted by one syllable or by a segmental chain consisting of two or more syllables. For example, in the context *ń ma X sàn* ‘I did not buy an X’, the following tonal realizations are found: *bà* [bă] ‘goat’, *bàden* [bàdę́] ‘kid’, *bàmuso* [bàmúsó] ‘she-goat’.

The tonemic status of H is proved by the following criteria:

– the Shared TBU criterion: H can be part of a contour on a single TBU, see §3.1.2 and §2.2.1;

– the Activity Criterion: H can spread to the right (the “tonal compacity rule”), see §6.1.2, §6.1.3.

Evidently, the L toneme is more active than H, but there is no reason to consider H as a Ø tone, contrary to an opinion widely spread among Mande specialists, e.g. (Creissels & Grégoire 1993; Green 2010).

Tonal contours do not comply to the Contour toneme criteria or to the general criterion of Persistence, therefore, they have no phonemic status.

As already mentioned, the LH contour is the allotone of the /L/ toneme when followed by another /L/. If the span of the /L/ toneme equals one syllable, this syllable hosts the LH contour: *cè nìn* [L cě] [L nìn] ‘this man’.

The HL contour appears on the final H-toned syllable of a word when it is followed by a floating low tone in a prepausal position, and the floating L is docked onto the final syllable, together with H: *bá* ` [bâ] ‘river\ART’, *téri* ` [térî] ‘friend’, *mùso* ` [mùsô] ‘woman’.

---

[1] In fact, the distribution between both allotones is more complicated. In particular, some speakers may produce the LH allotone of the L toneme even if it is not followed by another L; see (Creissels 1994: 286–287).

The LHL contour appears on a monosyllabic word when it corresponds to a L-toned span followed by a floating L in a prepausal position: *cɛ̀* ` [cɛ̌`] 'man\ART'.

3.3. Floating tones

In Bambara, only L can float. The floating low tone appears mainly as a tonal morpheme, representing a definite/specific article. In addition, it makes part of the lexical tonal contours of certain words, e.g.: *jɔ́n* ` 'who?', *yèrɛ* ` 'self', *bí* ` 'ten' (in compound numerals), and some others.

When followed by a pause, the floating low tone is docked onto the preceding syllable whose tone is necessarily high, so that the syllable is realized with a falling tone, HL: *jɛ́gɛ* ` [jɛ́gɛ̂] 'fish\ART', *kɔ̀gɔ* ` [kɔ̀gɔ̂] 'salt\ART'. If the floating L is followed by a H-toned word, the subsequent H tone is downstepped: (L)H!H (1). If followed by a L-toned word, the floating low tone is erased and it is not counted in the TDI calculation (2).

(1) *Túlón* *!kérá.*
[H tú.lon][L `] [H ké-ra]
Túlon ` *ké-ra.*
play\ART do-PFV.INTR
'There was a play', 'A play took place'.

(2) *Dén* *nànà.*
[H dén] [L nà-na]
Dén` *nà-na.*
child\ART come-PFV.INTR
'A/the child came'.

A floating L is a separate toneme. If it is followed by a toneless syllable (a predicative marker, the possessive marker *ka,* the conjunction *ni* 'and', etc.), this syllable is integrated into its tonal span (3).

(3) *Dén* ***yè*** *jɛ́gɛ́* *mìnɛ̀.*
[H dén][L ` **ye]** [H jɛ́gɛ] [L mìnɛ]
Dén` ***ye*** *jɛ́gɛ* ` *mìnɛ.*
child\ART PFV.TR fish\ART catch

3.4. Downdrift and downstep

The Bambara tonal system is characterized by downdrift (in a sequence HLH, the H after L is realized lower than the first H), and there is also a downstep triggered by a floating low tone, see §3.3.

3.5. Upstep

If a sequence of H-toned syllables is followed by L, the H tone of the last syllable of the sequence is automatically enhanced to xH (4). This phenomenon can be regarded as an upstep.

(4) *Súrúkű* *nànà.*
Súruku` *nà-na.*
hyena\ART come-PFV.INTR
'A/the hyena came'.

3.6. Other suprasegmental features of tonemes, apart from pitch

There are no suprasegmental features in Bambara apart from the pitch.

4. Tonotactics: tonal span, tonal phrase

4.1. Tonal span limits

4.1.1. Tonal span size

The size of a tonal span varies from zero (when a floating low tone surfaces as a downstep) to (theoretically) infinity.

4.1.2. Change of limits of a tonal span

Limits of a tonal span can be easily modified through the Tonal Spread rule (§6.1.2) which results in incorporation of derivative and inflectional suffixes into the tonal span of the word root, and Tonal Compacity rule (§6.1.3) which brings forth the incorporation of the non-initial components of most types of compound words into the tonal span of the initial component (see examples in §4.3). The Tonal Compacity rule is also applied to certain syntactic constructions: attributive constructions with certain classes of adjectives; constructions with nominal attribute; constructions of preverbal adverbs with verbs (see examples in §4.1.4). In all such instances, the span of the initial toneme is expanded to the right.

Some auxiliary words ("predicative markers", the possessive marker, the coordinative conjunction) are toneless and are regularly incorporated into the preceding tonal span, in agreement with the Tonal Spread rule (see examples in §4.3).

4.1.3. Tonal spans and other units

Prototypically, a tonal span equals a word. However, deviations from this principle are found.

1) Tonal span can be shorter than a word.

– In prefixed and compound verbs, the verbal stem and the prefixed component maintain their tonal autonomy, i.e., each component corresponds to a separate tonal span. E.g.: *kùnnagòsi* [L kùnna][L gòsi]'to humiliate', *lágèlɛya* [H lá][L gèlɛya] 'to solidify'.

– Disyllabic temporal adverbs and some conjunctions typically have contour HL, which is analyzed as a combination of two tonal spans: *sálòn* [H sá][L lòn] 'last year', *kúnùn* [H kú] [L nùn] 'yesterday', *báwò* [H bá][L wò] 'because'.

– Compound postpositions always include two tonal spans: *kèrɛfɛ̂* [L kèrɛ][L fɛ̀] 'near', *ɲémà* [H ɲé][L mà] 'in front of'.

– There is a limited number of tri- or quadrisyllabic (rarely disyllabic) nouns containing more than one tonal span. Such nouns can be compound (*ɲíntàra* [H ɲín][L tàra] 'gum', *díyagòya* [H diya][L gòya] 'coercion') or simplex (*tásàlen* [H tá][sàlen] 'kettle for ablutions', *kárakàsa* [H kára][L kàsa] 'fish sp.').

– Floating low tone, if not erased (when followed by a low-tone segment) or spread onto the subsequent toneless word, surfaces as downstep before a H, in which case its tonal span length equals Ø, or is docked onto the preceding syllable, and its tonal span shares a syllable with the preceding H-tone span. See in more detail §3.3.

2) Tonal span can be longer than a word.

– Some auxliary words are toneless. In a phrase, they are incorporated into the preceding tonal span.

– In some syntactic constructions, non-initial words loose their tonemes and are incorporated into the tonal space of the construction-initial words.[2] These constructions are:

[2] In the Mandeist linguistic tradition, this phenomenon is usually referred to as "tonal compacity", a term introduced by Denis Creissels; for a survey of tonal compacity in Mande languages, see (Green 2018; Green & Konoshenko 2022). Tonal compacity is often treated as an absolute criterion of wordhood in Manding, e.g. (Creissels 2009). However, this approach leaves some important questions unresolved and should be relativized.

Attributive, Noun + Adjective: *só bilen* [H sóbilen] ‘red (*bìlen*) house (*só*)’.

Determinative (construction with a genitive modifier): *sàma kun* [L sàmakun] ‘elephant (*sàma*) head (*kùn*)’.

Construction of a preverbal adverb + verb: *sèbɛkɔrɔ gɛn* [L sèbɛkɔrɔ gɛn] ‘chase (*sèbɛkɔrɔ*) seriously (*gɛ́n*)’. As a variety of this construction can be seen the comparative construction with adverbialized nouns, e.g. *fàli bugɔ* [L fàli bugɔ] ‘beat (*bùgɔ*) as a donkey (*fàli*)’.

The status of these syntactic constructions is ambiguous. There is a strong trend in the Mandeist studies to consider them as compound words (in which case it is assumed that the coincidence with a tonal span is the main criterion of the wordhood in Bambara).

4.2. Combinations of tonemes

Prototypically, tonal span coincides with a word (for the details, see §4.1). If a word contains more than one tonal tonal span, combination of tonemes within a word is more or less free.

Foot bondaries do not play role in the distribution of tonal spans.

4.3. Toneless syllables and morphemes

4.3.1. Toneless syllables

There are no toneless syllables at the surface level.

4.3.2. Toneless morphemes

All suffixes, both inflectional (which are few) and derivational (which are rather numerous) have no lexically attributed tonemes and should be regarded as toneless. Ex.: *táa* ‘go’ + *-ra* PFV.INTR → |*táa-ra*| [táará]; *sà* ‘die’ + *-ra* → |*sà-ra*| [sàrà].

Most of monosyllabic verbal construction markers (in the Mandeist tradition, “predicative markers”), the coordinative conjunction/comitative preposition *ni,* the possessive marker *ka,* the plural marker *u* are also toneless.

The toneless syllables are integrated into the preceding tonal span. So, in (5a), the toneless predicative marker *ye* is incorporated into the L tonal span of the pronoun *ù*, and in (5b), in the H tonal span of the pronoun *í.*

(5a)	*Ù*	***yè***	*ń*	*gɛ́n.*
	[L ù	ye]	[H ń]	[H gɛ́n]
	Ù	*ye*	*ń*	*gɛ́n.*
	3PL	PFV.TR	1SG	chase

‘They chased me away’.

(5b)	*Í*	***yé***	*ń*	*gɛ́n.*
	[H í	ye]	[H ń]	[H gɛ́n]
	Í	*ye*	*ń*	*gɛ́n.*
	2SG	PFV.TR	1SG	chase

‘You (sg.) chased me away’.

4.4. Tonal phrases

As tonal phrases can be considered the attributive construction, the determinative construction and the construction “preverbal adverb + verb” mentioned in §4.1.4. These constructions represent single tonal spans and are therefore word-like (from the viewpoint of tonotactics).

5. Stress and tone; culminativity; prominence; obligatoriness

5.1. Culminativity

Bambara tone is not culminative: one word form can contain more than one toneme, see §4.1.

5.2. Stress

Bambara has no stress.

5.3. Positional prominence

In disyllabic feet with a short vowel of the initial syllable, the second syllable vowel is usually realized long and intense, while the first vowel is reduced or even elided: *bìla* [blà] 'put', *túlo* [tló] 'ear'. In more rare contexts, foot-final upper vowels can elide, e.g.: *bárika* [bárká] 'benediction'. The predisposition of vowels to elision is related to the characteristics of the vowels and the foot-internal consonants, therefore, this process is of phonetic, rather than phonological nature; see (Vydrin 2020b).

5.4. Obligatoriness of tone

In Bambara, any word-form bears at least one toneme or is included into a tonal span of a neighbouring word. Therefore, the Bambara tonal system is characterized by obligatoriness.

6. Tonal rules. Segmental rules which have incidence on tones

6.1. Tonal rules

6.1.1. OCP

OCP in Bambara concerns realizations of the L toneme: if it is followed by another L toneme, a buffer high tone is inserted at the end of the first L span. E.g.: *mùso* 'woman' + *sàba* 'three' → [mùsó sàbà] 'three women'.

This rule is optional in the context "verb + oblique": if a L-tone verb is followed by a L-tone oblique, insertion of a buffer H tone at the end of the verbal tone span is not obligatory.

OCP is not applicable in the following cases:

– Two words, 3SG light pronoun *à* and the infinitive marker *kà,* always surface with a L tone, no buffer H tone is inserted before another L.

– When a floating L docks onto the monosyllabic toneless plural marker *u*, no buffer H is inserted when it is followed by another L (6).

(6)

Cɛ̌	*ꜜyé*	*fàlí**ù***	*mìnɛ̀.*
[L cɛ̀][L `	ye]	[L fàli][L `-u]	[L mìnɛ]
Cɛ̀-`	*ye*	*fàli-`-u*	*mìnɛ.*
man-ART	PFV.TR	donkey-ART-PL	catch

'The man caught the donkeys'.

The OCP rule does not affect the tonal density, as far as it does not change the number of tonemes.

6.1.2. Tonal spread

All derivative and inflectional suffixes in Bambara are underlyingly toneless. On the surface, they are integrated into the tonal span of the root/stem, e.g.: [L tìgɛ] 'cut' + -ra PFV.INTR → [L tìgɛ-ra], [H sé] 'arrive' + -ra PFV.INTR → [H sé-ra].

The tonal spread also concerns toneless auxiliary words ("predicative markers", i.e. STAMP words); the coordinative conjunction *ni,* the possessive marker *ka*, etc., see §4.3.2.

6.1.3. Tonal compacity

As a general rule, the toneme of the initial components of a nominal compound extends on the non-initial components whose lexical tones are erased: *bíɲɛ* 'liver' + *kàlama* 'stick' → *bíɲɛkalama* [bíɲɛ́kálámá] 'liver kebab'.

The tonal compacity rule is also applied to the syntactic constructions mentioned in §4.4; from the tonotactic viwepoint, these constructions behave in the same way as compound nouns.

The tonal compacity also serves as a marker of nominalization for prefixed and compound verbs: [H lá-][L jàrabi] 'to test smb.' → [H lájarabi] 'temptation'.

The tonal compacity rule erases tonemes of non-initial segments of a compound word or a tonally compact syntactic construction, therefore, it does affect the tonal density.

6.1.4. Simplification of the tonal contour of the stem of a derived or compound word

If a noun containing more than one tonal span enters into derivation or word compounding as an initial element, its tonal contour is simplified: the first toneme is spread over the entire derived or compound word. E.g., *tásàlen* 'kettle for ablutions' + *-ba* an augmetative suffix → *tásalenba* [H tásalenba] 'big kattle'; *bámàna* 'Bambara' + *kán* 'language' → *bámananakan* [H bamanankan] 'Bambara language'.

6.1.5. Phrase-final lowering

If there is phrase-final sequence of H tones preceded by a L tone, the entire H-tone sequence can be optionally lowered to L:

(7) *Í* *bɛ́* *sà* ***ǹ*** ***ɲɛ̀.***
[H í bɛ] [L sà n ɲɛ]
Í *bɛ* *sà* *ń* *ɲɛ́.*
2SG IPFV die 1SG before
'You'll die before me (earlier than me)'.

This rule is optional, it will not be taken into account in the calculation of the TDI.

6.2. Segmental rules affecting the tonal density

6.2.1. Vocalic assimilation and vocalic elision

If a word begins with a vowel, the final vowel of the preceding word usually undergoes regressive assimilation. Words beginning with a vowel can be pronouns, borrowed common nouns or personal nouns. Taking into account the rigid syntactic order of Bambara, the preceding words can be predicative markers, copulas and verbs.

The rules of the vocalic assimilation are complicated, and besides, they vary among Bambara speakers and dialects. In Diallo's articles (2003; 2004), vocalic assimilation in the Segu dialect is described. In this variety, the resulting vowel is most often long and corresponds to the initial vowel of the second word (8).

(8) *À* ***báa*** *ꜜcée* *fɛ̂.*
À *bi* *à* *cí* *ê* *fɛ̂.*
3SG PFV 3SG send 2SG.FRT with
'He sends it with you' (Diallo 2003: 22).

More rarely, assimilation does not take place (9), and sometimes it is optional.

(9) *À* *náa* *ꜜbánbá* ***í*** *yé.*
À *na* *à* *bánba* *í* *yé.*
3SG CERT 3SG strengthen 2SG for
'He will make an effort for you' (Diallo 2003: 29).

In the variety analyzed by Creissels (1994: 231–232, 288–289), the resulting vowel is short (10), although this author mentions that some other speakers realize it as long.

(10) *Ádámá* ***yá*** *ꜜwéle.*
Ádama *ye* *à* *wéle.*
Adama PFV.TR 3SG call
'Adama called him' (Creissels 1984: 231).

The tonal modifications accompanying the vocalic assimilation/elision can be represented as follows:

– If the underlying tone of the consonantless syllable is the same as that of the preceding or the subsequent syllable, it is erased: cv́ v́ cv̀ → cv́(v) cv̀; cv́ v̀ cv̀ → cv́(v) cv̀; cv̀ v́ cv́ → cv̀(v) cv́, etc., e.g. (11).

(11) *À* *má* ***bàlìi*** *lá.*
À *ma* *bàla* *í* *lá.*
3SG PFV.NEG surprise 2SG to
'It did not surprise you' (Diallo 2003: 25).

– If the consonantless syllable has underlying low tone, and both surrounding syllables have high tones, the resulting syllable surfaces with a high tone, and the following syllable has a downstepped high: cv́ v̀ cv́ → cv́(v) ꜜcv́ (see *báa* in ex. (8), *náa* in ex. (9), *yá* in ex. (10)).

– If the consonantless syllable has underlying high tone, and both surrounding syllables have low tones, the resulting syllable surfaces with a rising tone: cv̀ v́ cv̀ → cv̌(v) cv́ (12).

(12) ***kǐ*** *jɔ̀*
kà *í* *jɔ̀*
INF REFL stand.up
'to stand up' (Creissels 1994: 232)

The vowel assimilation/elision affects the tonal density in two ways. Firstly, it diminishes the number of syllables (even if the resulting vowel is long, we have one syllable instead of two). Secondly, it brings forth erasing of tonemes in the contexts like (11) (but not like (10) or (12)).

Besides, two elements tied by vocalic assimilation are considered to be one prosodic word. Therefore, the assimilation decreases the word-based TDI.

6.2.2. Elison of the first vowel in a disyllabic foot

If a disyllabic featural foot has a short vowel of the initial syllable, this vowel can be optionally elided. The elision is favoured by the following factors:

– foot-initial labial and alveolar stops and fricatives. To the contrary, palatal stops and all the sonorants disfavour it. Velar stops occupy an intermediate position in this cline;

– foot-internal sonorants *l, y, ɲ* favour the vocalic elision, while *b, g, f, w* disfavour it. Other foot-internal consonants allow the elision if other factors are favourable to it;

– heterotimbral combinations of vowels with a close V_1 favour elision; homotimbral combinations of mid-open vowels disfavour it. Other combinations occupy an intermediate position.

In more detail, see (Vydrin 2020b).

This vocalic elision, being optional, is not taken into account in the calculation of the tonal density.

7. Grammatical tones

7.1. List of grammatical tones

7.1.1. Tonal article

The referentiality is expressed in Bambara by a tonal article which goes back to a demonstrative pronoun/determiner *ò*. In modern language, the segmental component of this form has been lost, and the article is represented by a floating low tone (on the realizations of the floating low tone, see §3.3).

The tonal article appears either on the noun or on the adjective or participle following the noun.

7.1.2. Tonal compacity

The "tonal compacity" (i.e., erasing of a lexical toneme of a word and the spread of the preceding toneme onto this word, see §6.1.2) can be regarded as a tonal morpheme-operation, the marker of syntactic relation between words/components of compound words.

The tonal compacity decreases the tonal density.

7.1.3. Tonal morpheme of nominalization

As mentioned in §6.1.4, prefixed and compound verbs, which bear two tonemes, become tonally compact (i.e., the toneme of the initial component spreads over the entire word) when nominalized. However, this rule has exceptions: some prefixed and derived verbs with a H-toned initial component (most often the causative prefix *lá-*) and a L tone on the verbal stem, when nominalized, acquire a L toneme which extends to the entire word: *lá|jìgin* 'lower' → *làjigin* 'lowering', *kónɔna|fili* 'embarrass' → *kɔ̀nɔnafili* 'perplexity'. This L toneme can be considered as a nominalization morpheme.

This derivational tonal morpheme is irregular in Bambara, there are numerous cases where it could be expected, but it does not appear, e.g. *lá|jɛ̀* 'to gather' → *lájɛ* 'meeting' (rather than **làjɛ*).[3]

The nominalization morpheme has no impact on the tonal density: if it is not applied, a nominalized form is tonally compact anyway, i.e., it bears only one toneme.

7.2. Tonal paradigms

There are no tonal paradigms in Bambara.

8. Differentiation of parts of speech by tone

8.1. Verbs

Verbs differ from other parts of speech by their prefixal derivation and compounding along the model N+V, where the components of a complex verb maintain their original tonemes. In verbal nouns dervied from such verbs the non-initial component loses its toneme and is incorporated into the tonal span of the initial component, see §7.1.3.

8.2. Adjectives

Adjectives form two classes.

The first class includes simplex adjectives and adjectives derived from qualitative verbs by the means of the suffix *-man.* Their particularity is that their lexical tones are erased in the attributive construction, so that they are integrated into the tonal span of the preceding noun, e.g.: *só* 'house' + *bìlen* 'red' → [H só bilen] 'red house'; *síra* 'road', *sùrun-man* 'short' → *síra surunman* [H síra surunman] 'the short road'.

The second class is constitued by adjectives derived by suffixes *-ma* (ornative), *-ntan* (privative) and compound adjectives. The adjectives of this class maintain their lexical tones in the attributive construction: *kɔ̀nɔ* 'bird' + *sèn-ntan* 'legless' → *kɔ̀nɔ sènntan*` [L kɔ̀nɔ] [L sènntan] 'a legless bird'.

8.3. Adverbs

There are two groups of adverbs distinguished by their tonal characteristics:

– most adverbs of time have tonal contour HL (i.e., they bear two tonemes): *kúnùn* 'yesterday', *sísàn* 'now', *sálòn* 'last year';

– all expressive adverbs have H tone which is often realized as extra-high: *pútukuputuku* 'glowing with health' (baby), *sélɛkusɛlɛku* 'rapidly', *mélɛku* 'completely' (closed), etc.

8.4. Postpositions

In compound postpositions, each component keeps its original tone (i.e., the tonal compacity rule is not applied): *dáfɛ̂* [H dá][L fɛ̀] 'near', *sènkɔ́rɔ* [L sèn][H kɔ́rɔ] 'among', *nɔ̀fɛ̂* [L nɔ̀][L fɛ̀] 'behind'.

---

[3] This tonal morpheme is more regular in the Maninka of Guinea and in Jula of Côte d'Ivoire. In Bambara, its use varies among dialects.

9. Diachrony of tones

Most probably, the tonal system of the proto-language of the Manding group was similar, in main lines, to the Bambara one. There is no tonal reconstruction so far for more ancient stages.

10. Tonal notation in the writing

In the first Bambara orthography introduced in Mali in 1967, tones were not marked, there is only one exception: the 2PL light pronoun *á* was spelled as *a',* in order to distinguish it from the 3SG pronoun *à* (which was spelled as *a*).

In the current Bambara orthography which replaced the old one in the 1980s, the same principle has been retained (tones are not marked, with the exeption of two personal pronouns).

In academic publications and in dictionaries, tones are usually marked, each author using notation system of his own.

The Bambara writing is widely used in the school education and in literacy courses, however, few people master it correctly, and it is barely used in the everyday life (and when used, the orthography rules are rarely respected).

11. Calculation of the Tonal Density Index

The texts are represented in three lines (with a free translation as the fourth line): a phonological representation in the first line, an annotated version (according to the standard Annotation Rules of the ThoT project) in the second line, and glosses are in the third line (see list of conventional glosses before the References).

Text 1. Traoré, Benoît. Na magosa. Ed. Kulibali, Baabilen (Charles Bailleul). Bamako: Donniya, 1996.

An initial fragment, 62 words, 102 syllables.

Ń	ye	à	dá	fála-tɔ-nin`	dɔ́	lá.
[H ń	y'+]	[L à]	[H dá]	[H fá.la-|tɔ-|nin]<[L `]>	[H dɔ́]	[H lá]
1SG	PFV.TR	3SG	put	orphan\ART	a	at

'I am going to speak about an orphan.'

Fálatɔnin`	dɔ́,	à	mɔ̀kɔ́`	júguyara
[H fá.la-|tɔ-|nin]<[L `]>	[H dɔ́]	[L à]	[L mɔ̀-|ko]<[L`]>	[H jú.gu-|ya-|ra]
orphan\ART	a	3SG	education\ART	harden-PFV.INTR

fɔ́	kà à	dàmatɛ̀mɛ.
[H fɔ́]	[L k'-à]	[L dà-|ma][L -|tɛ̀.mɛ]
till	INF-3SG	limit-SUPER-pass

'An orphan, his upbringing was extremely difficult.'

Sɛ̀gɛn`	dígira	à	lá,	fɔ́
[L sɛ̀.gɛn]<[L `]>	[H dí.gi-|ra]	[L à]	[H lá]	[H fɔ́]
tiredness\ART	press-PFV.TR	3SG	at	till

kà à	dàmatɛ̀mɛ.
[L k'-à]	[L dà-|ma][L |tɛ̀.mɛ]
INF-3SG	limit-SUPER-pass

'He was extremely poor.'

Fálatɔnin`	ye	màsakɛ`	dɔ́	kómɛn
[H fá.la-|tɔ-|nin]	<[L ye]>	[L mà.sa-|kɛ]<[L `]>	[H dɔ́]	[H kó-|mɛn]
orphan\ART	PFV.TR	king-male\ART	a	matter-hear

jàmani	wɛ́rɛ	kó	ní í	séra
[L jà.ma|ni]	[L wɛ́.rɛ]	[H kó]	[H n'-í]	[H sé-|ra]
country	other	that	if-2SG	arrive-PFV.INTR

ò	fɛ̀,	kó ò	bɛ	sé	k'í	kɛ́
[L ò]	[L fɛ̀]	[H kóo][L-	bɛ]	[H sé]	[L `][k'-í]	[H kɛ́]
that	by	QUOT-that	IPFV	arrive	INF-2SG	do

màa	yé.
[L mà.a]	[H yé]
human	as

'The orphan heard about a king in another country, that if one comes to him, he can make you a man.'

Hìnɛnci	dòn.
[L hì.nɛ-|nci]	[L dòn]
merciful	ID

'He is a merciful person.'

Fálatɔnin`	ye	síra`	tà,	à	táara
[H fá.la-|tɔ-|nin]	<[L ye]>	[H sí.ra]	[L tà]	[L à]	[H tá.a-|ra]
orphan\ART	PRF.TR	road\ART	take	3SG	go-PFV.INTR

màsakɛ	ìn	fɛ̀	kà	wà	à	dàntìgɛ
[L mà.sa-|kɛ]	[ìn]	[fɛ̀]	[L kà]	[L wà]	[L à]	[L dàn][L -|tì.gɛ]
king-male	this	by	INF	go	3SG	give.account

màsakɛ`	yé.
[L mà.sa-|kɛ]<[L `]>	[H yé]
king\ART	COM

'The orphan set out, he came to the king and presented him the aim of his visit.'

In this sample, we have 102 syllables and 69 tonemes. The TDI equals 67,6.

Text 2. Popular tale *Dùnunba kúmata* 'Talking drum'

An initial fragment, 220 words

Published in: Oumar N. Diarra. Dununba kumata. Paris: Donniyakadi, 2012. The audio file is available (the text has been corrected with reference to the audio file).

Bì	ma	dúniya`	dá,
[L bì	ma]	[H dú.ni|ya]<[L `]>	[H dá]
today	PFV.NEG	world\ART	create

wà	síni	tɛ́nà	dúniya`	bán.	
[L wà]	[H sí.ni]	[H tɛ́][L |nà]	[H dú.ni|ya]<[L `]>	[H bán]	
well	tomorrow	FUT.NEG	world\ART	end	

It is not today tha the world has been created, and it is not tomorrow that the world will end.

À	tùma`	ka	jàn	kósɛbɛ,	mɔ̀gɔninfin`u
[L à]	[L tù.ma]	<[L ` ka]>	[L jàn]	[H kó-|sɛ.bɛ]	[L mɔ̀.gɔ-|nin-|fin]<[L `-|u
3SG	time\ART	QUAL.AFF	long	matter-serious	human-DIM-black\ART-PL

ni	kúngo`	sògo`-u	tùn	bɛ́
ni]>	[H kún.go]	[L sò.go]<[L `-|u]>	[L tùn]	[H bɛ́]
and	wilderness\ART	animal\ART-PL	PST	IPFV.AFF

ɲɔ́gɔn	síra	bɔ́.
[H ɲɔ́.gɔn]	[H sí.ra]	[H bɔ́]
RECP	road	exit

Long ago, humans and wild animals used to associate with each other.

Bádenya	sira`	àní	tériya	sira`
[H bá-|den-|ya	si.ra]	[L à][H -|ní]	[H té.ri-|ya	si.ra]
mother-child-ABSTR	road\ART	3SG-and	friend-ABSTR	road\ART

tùn	bɛ	ù	ni	ɲɔgɔn	cɛ́.
[L tùn	bɛ]	[L ù	ni	ɲɔ.gɔn]	[H cɛ́]
PST	BE	3PL	and	RECP	between

They maintained relations of brotherhood and friendship.

Sàn`	dɔ́	kɛ́ra,	kúngo`	sògo`u	ka
[L sàn]<[L `]>	[H dɔ́]	[H kɛ́-|ra]	[H kún.go]	[L sò.go]<[L `-|u	ka]>
year\ART	a	do-PFV.INTR	wilderness\ART	animal\ART-PL	POSS

sènɛfɛn`u	ma	ɲà,	k'à	sábu`	kɛ́
[L sɛ̀.nɛ-|fɛn]<[L `|u	ma]>	[L ɲà]	[L k'-à]	[H sá.bu]<[L `]>	[H kɛ́]
agriculture-thing\ART-PL	PFV.NEG	succeed	INF-3SG	cause\ART	do

ù	tùn	ye	ù	ká	jíri`-u	bɛ́ɛ	tìgɛ:
[L ù]	[L tùn	ye]	[L ù]	[H ká]	[H jí.ri]>[L `-|u]	[H bɛ́ɛ]	[L tì.gɛ]
3PL	PST	PFV.TR	3PL	POSS	tree\ART-PL	all	cut

sánji`	ma	nà	ù	fɛ̀	yèn.
[H sán-|ji]<[L `	ma]>	[L nà]	[L ù]	[L fɛ̀]	[L yèn]
sky-water\ART	PFV.NEG	come	3PL	by	there

One year, wild animals' fields did not yield well, because they had cut all the trees: there was no rain in their place.

Mɔ̀gɔninfin`u	tùn	ye	káran	nádòn
[L mɔ̀.gɔ-|nin-|fin]<[L `-|u]>	[L tùn	ye]	[H ká.ran]	[H ná][L -|dòn]
human-DIM-black\ART-PL	PST	PFV.TR	care	CAUS-enter

ù	ká	jíri`u	lá	ò	sàn	kélen`	ná.
[L ù]	[H ká]	[H jíri]<[L `-|u]>	[H lá]	[L ò]	[L sàn]	[H ké.len]<[L `]>	[L ná]
3PL	POSS	tree\ART-PL	at	that	year	one\ART	at

As for humans, they invested lots of efforts in the trees the same year.

Sánjiba`	nàna	ò-lu`	fɛ̀	yèn,
[H sán-|ji-|ba]	[L nà-|na]	[ò-|lu]	[L fɛ̀]	[L yèn]
sky-water-AUGM\ART	come-PFV.INTR	that-PL2	by	there

ù	ka	sɛ̀nɛfɛn`u	sàbatira	hàálì.
[L ù	ka]	[L sɛ̀.nɛ-|fɛn]<[L `-|u]>	[L sà.ba|ti-|ra]	[L hàa][L |lì]
3PL	POSS	agriculture-thing\ART-pl	prospere-PFV.INTR	very

In their place, it rained abundantly, and their fields yielded very well.

Sònsannin`,	n'à	bɛ́	wéle	kó	Jáàson,
[L sòn|san-|nin]<[L `]>	[L n'-à]	[H bɛ́]	[H wé.le]	[H kó]	[H Já][L .à.son]
hare-DIM\ART	if-3SG	IPFV.AFF	call	QUOT	N.PROP

ò	láfìlila	kójùgu.
[L ò]	[H lá][L -fì.li-|la]	[H kó][L -|jù.gu]
that	CAUS-throw-PFV.INTR	matter-bad

Hare, called Jason, got very anxious.

Sògo`u	tɔ́ɔrɔla	kɔ́ngɔ`	fɛ̀,
[L sògo]<[L `-|u]>	[H tɔ́ɔ.rɔ-|la]	[H kɔ́n.gɔ]	[L fɛ̀]
animal\ART-PL	suffer-PFV.INTR	hunger\ART	by

háli	ù	tɛ́	kɛ́ta	dɔ́n	túgunni.
[H háli]	[L ù]	[H tɛ́]	[H kɛ́-|ta]	[H dɔ́n]	[H tú.gun|ni]
even	3PL	IPFV.NEG	do-PTCP.POT	know	again

The animals suffered of hunger, they did not know any more what to do.

Sé`	bánna	ù	yé	péwu.
[H sé]<[L `]>	[H bán-|na]	[L ù]	[H yé]	[H pé.wu]
power\ART	end-PFV.INTR	3PL	as	totally

They were utterly out of forces.

Ù	bɛ́kà	kèlen-kelen	sa	kúngɔ`	fɛ̀.
[L ù]	[H bɛ́][L -kà]	[L kè.len-|ke.len	sa]	[H kún.gɔ]	[L fɛ̀]
3PL	PROG	one-one	die	wilderness\ART	by

They were starving to death one by one.

Sònsannin`	ka	kèkun,	bɛ́ɛ	b' ó`	dɔ́n.
[L sòn|san-|nin]<[L `	ka]>	[L kè.kun]	[H bɛ́ɛ	b'-ó][L `]	[H dɔ́n]
hare-DIM\ART	QUAL.AFF	sly	all	IPFV.AFF-that	know

But Hare is sly, everybody knows it.

Ò	dè	y' á`	tó	dón`	dɔ́,
[L ò]	[L dè]	[H y'-á][L `]	[H tó]	[H dón]<[L `]>	[Hdɔ́]
that	FOC	PFV.TR-3SG	remain	day\ART	a

Jàáson	wílila	kà	sé	tòro`	mà,
[L Jà][H .á.son]	[H wí.li-|la]	[L kà]	[H sé]	[L tò.ro]	[H mà]
N.PROP	rise-PFV.INTR	INF	arrive	rat\ART	ADR

kà	í	kánto:
[L kà]	[H í]	[H kán-|to]
INF	REFL	voice-remain

So, one day, Jason left his place and came to the Rat, he said:

Ń	téri	Tòro,	kámalenkɔrɔ	kɔnɔ	fɛɛrɛ`	mánà
[H ń]	[H té.ri]	[L tò.ro]	[H ká|ma.len-|kɔ.rɔ	kɔ.nɔ	fɛɛ.rɛ]`	[H má][L |na]
1SG	friend	rat	youth-old	belly	means\ART	COND

bán	dón`	mîn,	à	bɛ	sà	ò	dón`.
[H bán]	[H dón][L `]	[H mín][` L]	[L à	bɛ]	[L sà]	[L ò]	[H dón]<[L `]>
end	day\ART	REL	3SG	IPFV.AFF	die	that	day\ART

“My friend Rat, the day when young man’s runs out of ways to fill his stomach, he dies.

Ní	án	ma	dàbali	wɛ́rɛ	tìgɛ,
[H ní]	[H án	ma]	[L dà|ba.li]	[H wɛ́.rɛ]	[L tì.gɛ]
if	1PL	PFV.NEG	way	other	cut

kɔ́ngɔ`	bɛ	án	bɛ́ɛ	bìla	Kólojɛbugu.
[H kɔ́n.gɔ]<[L `	bɛ]>	[H án]	[H bɛ́ɛ]	[L bì.la]	[H kólo-|jɛ-|bugu]
hunger\ART	IPFV.AFF	1PL	all	put	bone-white-hut

If we find no new means, hunger will bring all of us to the village of White Bones.”

Tòro`	y’ á`	jáabi	kó:
[L tòr.o]<[L `	[H y’-á][L `]	[H jáa.bi]	[H kó]
rat\ART	PFV.TR-3SG	answer	QUOT

Rat answered:

Kɔ̀rɔ	Jaason,	nê	bɛ́	í	ka	bìla`	lá
[L kɔ̀.rɔ	Ja.a|son]	[H né][L-]	[H bɛ́]	[H í	ka]	[L bì.la]<[L `]>	[H lá]
elder	N.PROP	1SG.STR	BE	2SG	POSS	disposal\ART	at

sú`	àní	tìle.
[H sú]	[L à][H -|ní]	[L tì.le]
night\ART	3SG-and	day

“Elder Jason, I am in your disposal day and night”.

Hátɛ!	Í	ɲɛ́	bɛ́	dùnun`	mîn	ná
[H há|tɛ]	[H í]	[H ɲɛ́]	[H bɛ́]	[L dù.nun]<[L `]>	[H mín][L `]	[H ná]
sure	2SG	eye	BE	drum\ART	REL	at

nê	bólo,	ní	án	séra
[H né][L `]	[H bólo],	[H ní]	[H án]	[H sé-ra]
1SG.STR	CNTRL	if	1PL	arrive-PFV.INTR

kà	ɲɔ́gɔn	fàamuya,	án	bɛ	dúmu-ni`
[L kà]	[H ɲɔ́.gɔn]	[L fàa.mu-|ya]	[H án	bɛ]	[H dú.mu-|ni]<[L `]>
INF	RECP	understand-ABSTR	1PL	IPFV.AFF	eat-NMLZ\ART

kɛ́	fó	án	sàgo`	ni	án	dɔ̀gɔn`.
[H kɛ́]	[H fó]	[H án]	[L sà.go]<[L `	ni]>	[H án[	[L dɔ̀.gɔn]<[L `]>
do	till	1PL	will\ART	and	1PL	desire\ART

- “Sure! Do you see a drum in my hands? If we manage to understand each other, we’ll eat at will”.

Kɔ̀rɔ	Sònsan,	à	ɲɛ́fɔ	jóona	kàtuguni,
[L kɔ̀.rɔ	[L sòn|san]	[L à]	[H ɲɛ́-|fɔ]	[H jóo.na]	[L kà|tu.gu|ni]
elder	hare	3SG	eye-say	quickly	because

bìla-ka-suma`	tère`	man	ɲì.
[L bì.la-|ka-|su.ma]	[L tè.re]<[L `	man]>	[L ɲì]
leave-INF-cool\ART	chance\ART	QUAL.NEG	good

– “Elder Hare, tell me quickly about it, delay does not bring happiness!”

Text 3. Bajoliba: Badingɛ kɛlen bɛ ɲamanbɔnyɔrɔ ni ji jugu kɛyɔrɔ ye ‘The Niger river: The riverbank has become a plance of litter and bad liquids dumping’

By Nfamoro Keyita and Dɔkala Yusufu Jara, from the *Kibaru* monthly (# 595, December 2021), 167 words

Bájoliba:	Bádingɛ`	kɛ́len	bɛ́
[H Bá-|jo.li-|ba]	[H bá-|din.gɛ]<[L `]>	[H kɛ́-|len]	[H bɛ́]
river-blood-AUGM	river-hole\ART	do-PRCP.RES	BE

ɲàmanbɔnyɔrɔ`	ni	jíjugu-kɛyɔrɔ	yé.
[L ɲà.man-|bɔn-|yɔ.rɔ]<[L `	ni]>	[H jí-|ju.gu-|kɛ-|yɔrɔ]<[L -`]>	[H yé]
litter-dump-place\ART	and	water-bad-do-place\ART	as

The Niger river: The riverbank has become a plance of litter and bad liquids dumping.

N’í	ye	Bàmakɔ	dánkan`	mìnɛ	kà	táama,
[H n’-í	ye]	[L Bà.ma|kɔ]	[H dán|kan]	[L mì.nɛ]	[L kà]	[H tá.a|ma]
if-2SG	PFV.TR	N.PROP	bank\ART	catch	INF	walk

í	jìgila`	bɛ	mìsɛnya
[H í]	[L jì.gi-|la]<[L `	bɛ]>	[L mì.sɛn-|ya]
2SG	hope-MNT1\ART	IPFV.AFF	small-DEQU

hádamàden`u	kɛ́wale	jugu`	lá
[H há.da][L mà-|den]<[L `u]>	[H kɛ́-|wa.le	ju.gu]<[L `]>	[H lá]
Adam-child\ART-PL	do-action	bad\ART	at

kà	ɲɛ́sin	báji`	mà.
[L kà]	[H ɲɛ́-|sin]	[H bá-|ji]	[L mà]
INF	eye-direct	river-water\ART	ADR

I you walk along the riverbank in Bamako, you will be driven to dispair because of the human misdeeds towards the river.

Mɔ̀gɔ`u	kɛ́len	bɛ́	kà	só`u
[L mɔ̀.gɔ]<[L `-|u]>	[H kɛ́-|len]	[H bɛ́]	[L kà]	[H só]<[L `-|u]>
human\ART-PL	do-PRCP.RES	BE	INF	house\ART-PL

jɔ̀	fó	bádingɛ`	kɔ́nɔ,
[L jɔ̀]	[H fó]	[H bá-|din.gɛ]<[L `]>	[H kɔ́.nɔ]
stand	till	river-hole\ART	in

àní	k'à	kɛ́	ɲàmanbɔnyɔrɔ`u	yé.
[L à][H -|ní]	[L k'-à	[H kɛ́]	[L ɲà.man-|bɔn-|yɔrɔ]<[L `-|u]>	[H yé]
3SG-and	INF-3SG	do	litter-dump-place\ART-PL	as

People build houses even in the riverbed, and they turn it into a disposal dump.

Bágansu`u	fìlilen	bɛ́	fàn`	bɛ́ɛ	fɛ̀.
[H bá.gan-|su]<[L `-|u]>	[L fì.li-|len]	[H bɛ́]	[L fàn]<[L `]>	[H bɛ́ɛ]	[L fɛ̀]
cattle-corpse\ART-PL	throw-PTCP.RES	BE	side\ART	all	by

There are corpses of animals everywhere.

Ò	n'á`	tá	bɛ́ɛ	gàladonyɔrɔ`u	fána
[L ò]	[H n'- á][L `]	[H tá]	[H bɛ́ɛ]	[L gà.la-|don-|yɔ.rɔ]<[L `u]>	[H fá.na]
that	and-3SG	part	all	indigo-enter-place\ART	also

bɛ́	dánkan`u	ná.
[H bɛ́]	[H dán|kan]<[L `-u]>	[H ná]
BE	bank\ART-PL	at

And on the top of this, there are dyeworks on the riverbank.

Òlû	ka	jí	bɔ̀nta`u		yé
[L ò-|lu][L `	ka]	[H jí]	[L bɔ̀n-|ta]<[L `|u]>		[H yé]
that-pl	POSS	water	damp-PTCP.POT\ART-PL		EQU

pɔ́sɔninji-u	yé.
[H pɔ́.sɔ|nin-|ji]<[L -`-|u]>	[H yé]
poison-water-ART-PL	as

Their wastes are poisonous.

Nìn	kɛ́wale	nìnnú	bɛ́ɛ	ka	júgu
[L nìn]	[H kɛ́-|wa.le]	[L nìn][L -|nú]	[H bɛ́ɛ	ka]	[H jú.gu]
this	do-action	this-PL	all	QUAL.AFF	bad

báji`	mà.
[H bá-|ji]	[L mà]
river-water\ART	ADR

All these activities are harmful for the river water.

Ù	b'a`	tòli.
[L ù	b'- a][L `]	[L tò.li]
3PL	IPFV.AFF-3SG	rotten

They spoil it.

K'à	dámìnɛ	Wòyowayan-kɔ	lá	fó
[L k'-à	[H dá][L |mì.nɛ]	[L Wò.yo|wa.yan-|kɔ]	[H lá]	[H fó]
INF-3SG	mouth-catch	N.PROP-brook	at	till

bádingɛ̀	kɔ́nɔ	Bàmakɔ	kómini	náaninan`
[H bá-|din.gɛ]<[L `]>	[H kɔ́.nɔ]	[L Bà.ma|kɔ]	[H kó.mi|ni]	[H náa.ni-|nan]<[L `]>
river-hole\ART	in	N.PROP	commune	four-ORD\ART

ná,	ò	bɛ	séereya`	bɔ́.
[H ná]	[L ò	bɛ]	[H sée.re-|ya]<[L `]>	[H bɔ́]
at	that	IPFV.AFF	witness-ABSTR\ART	exit

From the river Woyonwayan and up to the riverbed in the IV commune of Bamako, evidences are everywhere.

Kàsɔrɔ	jísanimanko	cakɛda`	mîn	yé
[L kà-|sɔ.rɔ]	[H jí-|sa.ni-|man-|ko	ca-|kɛ-|da]<[L `]>	[H mín][` L]	[H yé]
INF-obtain	water-clean-ADJ-matter	work-do-mouth\ART	REL	EQU

“Sómagep`”	yé,	ò	bɛ	báji`	tà
[H So.ma.|gep]<[L -`]>	[H yé]	[L ò	bɛ]	[H bá-|ji]	[L tà]
N.PROP	as	that	IPFV.AFF	river-water\ART	take

kà	dí	mɔ̀gɔ`u	mà	wòrobinɛ`	fɛ̀.
[L kà]	[H dí]	[L mɔ̀.gɔ]<[L `-|u]>	[L mà]	[H wo.ro|bi.nɛ]<[L `]>	[L fɛ̀]
INF	give	human\ART-PL	ADR	tap\ART	by

Meanwhile, the clean water enterprise “SOMAGEP” takes river water and delivers it to the people by water pipe.

Nákɔ`u	fána	dálen	bɛ́
[H ná|kɔ]<[L `-u]>	[H fá.na]	[H dá-|len]	[H bɛ́]
vegetable.garden\ART-PL	also	put-PTCP.RES	BE

bádingɛ̀	kɔ́nɔ.
[H bá-|din.gɛ]<[L `]>	[H kɔ́.nɔ]
river-hole\ART	in

There are also vegetable gardens in the riverbed.

Mɔ́nnikɛla`u	yɛ̀rɛ	bɛ	jɛ́gɛ`u
[H mɔ́n-|ni-|kɛ-|la]<[L `-u]>	[L yɛ̀.rɛ	bɛ]	[H jɛ́.gɛ]<[L `-|u]>
go.fishing-NMLZ-do-AG.PRM\ART-PL	in.fact	IPFV.AFF	fish\ART-PL

mìnɛ	ò	bá	kélen	ìn	kɔ́nɔ.
[L mì.nɛ]	[L ò]	[H bá]	[H ké.len]	[L ìn]	[H kɔ́.nɔ]
catch	that	river	one\ART	this	in

Fishers are catching fish in the same river.

Ŋàman`u	mánà	báji`	tòli,	jí	saniman
[L ŋà.man]<[L `-|u]>	[H má][L |nà]	[H bá-|ji]	[L tò.li],	[H jí	sa.ni-|man]
litter\ART-PL	COND	river-water\ART	rotten	water	clean-ADJ

tɛ́nà	sɔ̀rɔ,	nákɔlafɛn	saniman	fána
[H tɛ́][L |nà]	[L sɔ̀.rɔ]	[H ná|kɔ-|la-|fɛn	sa.ni-|man]	[H fá.na
FUT.NEG	obtain	vegetable.garden-thing	clean-ADJ	also

tɛ	sɔ̀rɔ	sàngó	jɛ́gɛ	ɲuman.
tɛ]	[L sɔ̀.rɔ]	[L sàn][H |gó]	[H jɛ́.gɛ	ɲu|man]
IPFV.NEG	obtain	especially	fish	good

If the litter spoils river water, there will be no clean water, there will be no clean vegetables, not to speak about good fish.

Fɛ́n	jugu`	dúnni`,	àní	sìgida`
[H fɛ́n	ju.gu]<[L `]>	[H dún-|ni]<[L -`]>	[L à][H -|ní]	[L sì.gi-|da]<[L -`]>
thing	bad\ART	eat-NMLZ\ART	3SG-and	sit-mouth\ART

n'á`	lámini`	tíɲɛni`	bɛ	fìɲɛ`
[H n'- á][L `]	[H lá-|mi.ni]<[L -`]>	[H tí.ɲɛ-|ni]<[L -`	bɛ]>	[L fì.ɲɛ]
and-3SG	CAUS-encercle\ART	spoil-NMLZ\ART	IPFV.AFF	defect\ART

bìla	hádamàden`	ka	kɛ́nɛya`	lá.
[L bì.la]	[H há.da][L |mà-|den]<[L -`	ka]	[H kɛ́.nɛ-|ya]<[L -`]>	[H lá]
leave	Adam-child\ART	POSS	healthy-DEQU\ART	at

Consommation of bad food and degradation of the town and its surroundings makes harm to the human health.

Glosses

ABSTR – abstractive suffix
ADJ – suffix of adjectivization
ADR – adresative postposition
AFF – affirmative
AG.PRM – permanent agent
ART – tonal article
AUGM – augmentative suffix
BE – affirmative copula of the locative sentence
CAUS – causative prefix
CERT – certain future
CNTRL – postposition expressing the meaning of control
COM – comitative-equative-instrumental postposition
COND - conditional
COP – copula
DEQU – suffix of nouns and dynamic verbs derived from the quality verbs
DIM – diminutive suffix
EQU – copula in equative non-verbal sentence
FOC – focus marker
FRT – strong series of personal pronouns (Bambara)
FUT – future
ID –identification copula
INF – infinitive
INTR – intransitive
IPFV – imperfective
MNT1 – suffix for the names of mental activities
NEG – negative
NMLZ – suffix of nominalization
N.PROP – proper noun
ORD – ordinal numbers suffix
PFV – perfective
PL – plural (-u)
PL2 – irregular plural (-lu/-nu)
POSS – possessive marker

POT – potential (participle)
PROG – progressive
PST – marker of retrospective shift
PTCP – participle
QUAL – qualitative predicative marker
QUOT – quotative marker
RECP – reciprocal pronoun
REFL – reflexive pronoun
REL – relativization marker (determinant or pronoun)
RES – resultative (participle)
SBJV – subjunctive
SG – singular
SUPER – superessive
TR – transitive

References

Anonyme. 1993. *Guide de transcription et de lecture de la langue bambara*. 2nd edn. Bamako: Imprimerie DNAFLA.

Creissels, Denis. 1984. Le système des marques prédicatives en korokan. *Mandenkan* 7. 15–25.

Creissels, Denis. 1994. *Aperçu sur les structures phonologiques des langues négro-africaines*. 2nd edn. Grenoble: ELLUG.

Creissels, Denis. 2009. *Le malinké de Kita* (Mande languages and linguistics 9). Rüdiger Köppe Verlag. Köln.

Creissels, Denis & Claire Grégoire. 1993. La notion de ton marqué dans l'analyse d'une opposition tonale binaire: Le cas du mandingue. *Journal of African Languages and Linguistics* 14(2). 107–154.

Diallo, Mohamed Larabi. 2003. L'assimilation en bamanankan. *Mandenkan* 38. 15–45.

Diallo, Mohamed Larabi. 2004. L'assimilation vocalique régressive en bamanankan. *Mandenkan* 39. 23–46.

Green, Christopher R. 2010. *Prosodic phonology in Bamana (Bambara) : Syllable complexity, metrical structure, and tone. Doctoral dissertation*. Bloomington: Indiana University PhD dissertation.

Green, Christopher R. 2018. Moving ahead with replacive tone in Mande: A brief response to Konoshenko. *Mandenkan* 59. 121–129.

Green, Christopher R. & Maria Konoshenko. 2022. Tonal head marking in Mande compounds: Endpoint neutralization and outliers. *Mandenkan* 67.

Vydrin, Valentin. 2020a. Featural foot in Bambara. *Journal of African Languages and Linguistics* 41(2). 265–300. https://doi.org/10.1515/jall-2020-2012.

Vydrin, Valentin. 2020b. Vowel elision and reduction in Bambara. *Italian Journal of Linguistics* 32(1). 103–124. https://doi.org/10.26346/1120-2726-150.

Vydrin, Valentin. 2022. Vers un dictionnaire orthographique bambara. *Mandenkan* 68. 59–82. https://doi.org/10.4000/mandenkan.2905.