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HOW TO DISTINGUISH STATEMENT AND QUESTION IN BENG

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Tone changes occurring on a given Beng verb in positive and negative statements and questions in different tenses can be explained. Starting with tonal verb classes in the infinitive we derive the positive statement form, and from there the negative statement form by adding the negative statement morpheme -ɛ́. The positive and negative question forms are then derived from the respective statement forms by adding a L tone to the right of the tonal tier. This question L tone works leftwards and converts all non L's to L's till stopped by a specified boundary.

On peut expliquer les changements de tons qui surviennent dans un verb Beng aux différents temps de l'affirmatif, du négatif, de l'interrogatif, et de l'interro-négatif. Nous commençons pour présenter les classes tonals des verbes à l'infinitif, puis noun faisons dériver de l'infinitif la forme de l'énoncé affirmatif, d'où dérive à son tour par addition du morphème -ɛ́, la forme négatif. L'interrogatif et l'interro-négatif sont dérivés respectivement de l'affirmatif et du négatif par l'addition à l'extrême droite de la séquence tonale, d'un ton bas appelé B-Question. Ce ton se diffuse à gauche et transforme en tons bas tous les tons non-bas qu'il rencontre jusqu'à ce que cette diffusion soit arrêtée par une limite de domaine tonale.

0. INTRODUCTION

What do you do when you cannot distinguish between statement and question while learning a language? What do you do when you do not know whether a statement or question is positive or negative? Sometimes the tones change; sometimes they do not seem to change at all. In order to find an answer I studied the following four categories in the Beng[1] language:

postive statement - negative statement
positive question - negative question

The negative statement and positive question forms can be derived from the positive statement. But the negative question form must be derived from the negative statement. The positive statement must be derived from the infinitive form, based on verb classes.

1. VERB CLASSES

In order to write the simplest derivations, it is first necessary to divide the verbs into tonal classes[2] according to the tone patterns on the infinitive.

The infinitive consists of the verb root, of up to three syllables, followed by an infinitival suffix -lɛ. The relevant tones for the classification are the tone on the last root syllable, and the tone on the infinitival suffix. The latter can be H or L. What tones occur on earlier syllables of the root is not relevant for the classification. If we denote the sequence of tones on the root syllables preceding the last by X, we have the following four classes of verbs based on the tone patterns on the infinitive.

class 1	XL-H	e.g. **drù-lɛ́**	'to walk'
class 2	XM-H	e.g. **yrā-lɛ́**	'to live'
class 3	XH-H	e.g. **gbā́-lɛ́**	'to shout'
class 4	XM-L	e.g. **nū-lɛ̀**	'to come'

The hyphen separates the root tone pattern from the tone on the infinitival suffix.

Verb class 3 is so large that it is divided into three subclasses, one large subclass 3.1 and two small subclasses 3.2 and 3.3. Subclasses 3.1 and 3.3 are relevant for future derivations whereas subclass 3.2 is only relevant in past derivations. As far as membership is concerned, subclasses 3.2 and 3.3 are lexically determined. Subclass 3.1 is the total class 3 minus those verbs that belong to either 3.2 or 3.3.

2. DERIVATION OF POSITIVE STATEMENTS

2.0 INTRODUCTION

We first derive the positive statement forms in the future and past tenses. From the positive statement forms, the negative and question forms can be derived by a uniform set of rules.

Future and past positive statements are derived from the infinitive in the following two stages:

1. segmental deletion - the suffix segmentals are always deleted
2. tone adjustment

   a) Some derivations delete the suffix tone, some preserve it

   b) the resultant tone pattern after a) may be further adjusted:

   - In some cases, this tone pattern is preserved,
   - In some cases L tones are added to or replace other tones in the patttern
   - In some cases the whole tone pattern is replaced by the tone pattern that is characteristic of that particular combination of tense (past, future), polarity (positive, negative) and transitivity (transitive, intransitive).

The following three charts show how these verb classes can be regrouped into sets so that all verbs in any one set derive their positive statement forms with the same derivation. Each cell in

the charts represents one set and the essentials of the relevant derivation are given within the cell. Chart 1 displays future, chart 2 past transitive, and chart 3 past intransitive verbs.

class 1 XL-H	class 2 M-H	class 3 XH-H class 3.1	class 3 XH-H class 3.2	class 3 XH-H class 3.3	class 4 XM-L
NON-REDUPLICATED VERBS					
FUTURE: Set Fu-1 = class 1 + 2 + 3.1 + 3.2 delete suffix segments reserve total tone pattern				delete suffix segm. delete suffix tone then add L-tone Set Fu-2= class 3.3	preserve surviving tone pattern Set Fu-3= class 4
REDUPLICATED VERBS					
NOT POSSIBLE TO REDUPLICATE ROOTS OF CLASS 1 + 2	FUTURE: Set Fu-4 = classes 3 + 4 delete suffix segments and tone replace last tone by L				

Chart 1: Future verbs

class 1 XL-H	class 2 M-H	class 3 XH-H class 3.1	class 3 XH-H class 3.2	class 3 XH-H class 3.3	class 4 XM-L
NON-REDUPLICATED VERBS					
PAST TRANSITIVE: Set TrP-1 = all classes (except 3.2): - delete both suffix segments and tone - then replace <u>last</u> tone by L					
Set TrP-2 = only class 3.2 - small sub class with only four verbs - delete both suffix segments and tone - then replace <u>all but last</u> tone by L					
REDUPLICATED VERBS					
NOT POSSIBLE TO REDUPLICATE ROOTS OF CLASS 1 + 2	PAST TRANSITIVE: Set TrP-3 = class 3 + 4 - delete suffix segments - positive statement tonepattern is L				

Chart 2: Past transitive verbs

INFINITIVE					
class 1 XL-H	class 2 M-H	class 3 XH-H			class 4 XM-L
		class 3.1	class 3.2	class 3.3	
NON-REDUPLICATED VERBS PAST INTRANSITIVE: Set ItrP = all classes - delete suffix segments only - replace tone pattern by HL 3					
NOT POSSIBLE TO REDUPLICATE ROOTS OF CLASS 1 + 2	REDUPLICATED VERBS PAST INTRANSITIVE: Set ItrP = class 3 + 4 - delete suffix segments only - replace tone pattern by HL 3,4				

Chart 3: Past intransitive verbs

Note several things about these charts. The charts are split horizontally between non-reduplicated and reduplicated verbs, since their derivations are usually different.

Both future and past forms are derived from the infinitive, but that derivations are different for the two tenses. Thus different rows in the chart correspond to future, past transitive and past intransitive.

2.1 FUTURE DERIVATIONS FOR NON-REDUPLICATED VERBS

There are three different sets of verbs, Fu-1, Fu-2, Fu-3. Derivations are identical for verbs within each set, but differ from set to set.

Set Fu-1 = Class 1 + class 2 + class 3.1 + class 3.2:

This set consists of all the verbs of classes 1, 2, 3.1 and 3.2. All verbs in this set have a H-tone on the infinitive suffix - lɛ́.

The derivation of the future positive statement from the infinitive in the set Fu-1 first deletes the suffix segments. The whole infinitive tone pattern is preserved.

Derivation of Future Positive Statement for Set Fu-1 verbs

(1)	'to cry'	'to unload'	
a) Infinitive form	**bupɛ-lɛ** H H -H	**bla-lɛ** M -H	segmental tier tonal tier
b) Infinitive segmental suffix deletion	**bupɛ** H HH	**bla** MH	
c) Tone contraction	**bupɛ** H	**bla** MH	

d) Association convention	**bupɛ** |/ H	**bla** |\ MH
e) Output future positive statement	**búpɛ**	**blǎ**

The tone contraction rule c) reduces a sequence of identical tones at the end of a tone pattern to a single tone. Thus HHH reduces to a single H.

The verbs of this group can also be recognized by a H-tone or a MH- or LH-glide on the last syllable of the verb in the future positive statement.

Set Fu-2 = Class 3.3:

This set has the tone pattern XH-H on the infinitive. Only seven verbs have been found so far: six have LH-H tone pattern and one has MH-H tone pattern in the infinitive. However, membership in this set is determined lexically, not by tone pattern alone.

The derivation of the future positive statement from the infinitive in the set Fu-2 deletes both suffix segments and suffix tone. A L-tone is also added to the right of the tone pattern. Association of the tone pattern results in the final output of a HL-glide on the last syllable.

Derivation of Future Positive Statement for Set Fu-2 verbs

(2)	'to speak badly about'	
a) Infinitive form	**blabla-lɛ** M H -H	segmental tier tonal tier
b) Infinitive suffix deletion	**blabla**	
c) Infinitive suffix tone deletion	M H	
d) Adding a L-tone	**blabla** M HL	
e) Association convention	**blabla** | |\ M H L	
f) Output future positive statement	**blāblâ**	

Thus verbs of set Fu-2 are recognized by a HL-glide on the last syllable of the verb in the future positive statement.

Set Fu-3 = Class 4

This set consists only of class 4 verbs. They can be recognized by the M-tone on the last syllable of the verb root and the L-tone on the infinitive suffix -lɛ̀.

The derivation of the future positive statement from the infinitive in the set Fu-3 deletes both the suffix segments and the suffix tones.

Derivation of Future Positive Statement for Set Fu-3 verbs

(3)	'to stay a long time'	'to come'
a) Infinitive form	**bɛmo-lɛ** M M L	**bũ-lɛ** segmental tier M L tonal tier
b) Infinitive suffix deletion	**bɛmo**	**bũ**
c) Infinitive suffix tone deletion	M M	M
d) Association convention	**bɛmo** | | M M	**bũ** | M
e) Output future positive statement	**bɛ̄mō bũ**	

2.2 FUTURE DERIVATIONS FOR REDUPLICATED VERBS

Set Fu-4 = reduplicated forms of Classes 3 and 4:

This set consists of all verbs with reduplicated stems i.e. stems of classes 3 and 4, having tone patterns HH-H and MM-L respectively; roots of class 1 and 2 cannot be reduplicated.

The derivation of the future positive statement from the infinitive in set Fu-4 deletes both suffix segments and suffix tones. A further tone adjustment replaces the last tone in the resulting pattern by a L-tone (see step d below).

Derivation of Future Positive Statement for Set Fu-4 verbs

(4)	'to learn something'	'to ask'
a) Infinitive form	**dɔdɔ-lɛ** H H -H	**popo-lɛ** segmental tier M M -L tonal tier
b) Infinitive suffix deletion	**dɔdɔ**	**popo**
c) Infinitive suffix tone deletion	H H	M M
d) Replace the last tone by a L	**dɔdɔ** H L	**popo** M L
e) Association convention	**dɔdɔ** | | H L	**popo** | | M L
f) Output future positive statement	**dɔ́dɔ̀ pōpò**	

Thus the verbs of this group are not only recognized by their reduplicated syllables but also by a L-tone on the last syllable in the positive statement.

2.3 PAST DERIVATIONS FOR NON-REDUPLICATED VERBS

The derivations for the past forms depend on the transitivity of the verb. Thus we find three sets of verbs, intransitive verbs (ItrP) and transitive verbs (TrP) divided into two sets (TrP-1, TrP-2).

Set TrP-1:

This set has transitive verbs of all four tonal classes except those of subclass 3.2.

The derivation of the past positive transitive statement from the infinitive in set TrP-1 deletes both suffix segments and suffix tone. Then it replaces the last tone of the resulting tone pattern by a L tone.

Derivation of Past Positive Trans. Statement for Set TrP-1 verbs

(5)	'to sell'	'to unload'	
a) Infinitive form	**plɛble-lɛ** H M -L	**bla-lɛ** M -H	segmental tier tonal tier
b) Infinitive suffix deletion	**plɛble**	**bla**	
c) Infinitive suffix tone deletion	H M	M	
d) Last tone replaced by L	**plɛble** H L	**bla** L	
e) Association convention	**plɛble** | | H L	**bla** | L	
f) Output past positive transitive statement	**plɛ́blè**	**blà**	

Thus this set is characterised by a L-tone on the last syllable in the past positive transitive statement.

Set TrP-2 = subclass 3.2 only:

This set consists of only four transitive verbs which are determined lexically.

The derivation of the past positive transitive statement from the infinitive in set TrP-2 deletes both suffix segments and suffix tone. Then it replaces all but the last tone of the resulting tone pattern by a L-tone (step d below), irrespective of the tone pattern on the infinitive. The last tone remains H.

Derivation of Past Positive Trans. Statement for Set TrP-2 verbs

(6)	'to separate'	'to pour out'
a) Infinitive form	**sĩãnã-lɛ** HH H -H	**lila-lɛ** segmental tier M H -H tonal tier
b) Infinitive suffix deletion	**sĩãnã**	**lila**
c) Infinitive suffix tone deletion	HH H	M H
d) All but last tone replaced by L	**sĩãnã** LL H	**lila** L H
e) Association convention	**sĩãnã** || | LL H	**lila** | | L H
f) Output past positive transitive statement	**sǐ̀ãnã́**	**lìlá**

These verbs are recognized by a H-tone on the last syllable in the past positive transitive statement, a remarkable exception since all other verbs in the past tense have L-tone on the last syllable.

Set ItrP:

This set has intransitive verbs of all four tonal classes.

The derivation of the past positive intransitive statement from the infinitive in set ItrP first deletes the suffix segments only. In the second stage it replaces the whole tone pattern by a HL tone pattern.

Derivation of Past Positive Intrans. Statement for Set ItrP verbs

(7)	'to walk'	'to cry'
a) Infinitive form	**dru-lɛ** L -H	**bupɛ-lɛ** segmental tier H H -H tonal tier
b) Infinitive suffix deletion	**dru** L -H	**bupɛ** H H -H
c) Replace infinitive tone pattern by past intransitive tone pattern HL	**dru** H L	**bupɛ** H L
d) Association convention	**dru** |\\ H L	**bupɛ** | | H L
e) Output past positive intransitive statement	**drû**	**búpɛ́**

2.4 PAST DERIVATIONS FOR REDUPLICATED TRANS. AND INTRANS. VERBS

Set Trp-3:

This set consists of all transitive verbs with reduplicated stems i.e. classes 3 and 4, having tone patterns HH-H and MM-L respectively; since roots of class 1 and 2 cannot be reduplicated.

The derivation of the past positive transitive statement from the infinitive in set TP-3 first deletes the suffix segments only. Then it replaces the whole infinitive tone pattern by a L tone pattern which is the positive statement tone pattern for all reduplicated transitive verbs.

Derivation of Past Positive Trans. Statement for Set TrP-3 verbs

(8)	'to learn'	'to ask something'
a) Infinitive form	**dɔdɔ-lɛ** H H -H	**popo-lɛ** segmental tier M M -L tonal tier
b) Infinitive suffix deletion	**dɔdɔ** H H -H	**popo** M M -L
c) Replace infinitive tone pattern by the tone pattern L	**dɔdɔ** L	**popo** L
d) Association convention	**dɔdɔ** |/ L	**popo** |/ L
e) Output past positive transitive statement	**dɔ̀dɔ̀ pòpò**	

Set ItrP:

This set consists of all intransitive verbs with reduplicated stems, i.e. with reduplicated stems and tone patterns HH-H or MM-L. The derivation of the past positive statement form of these reduplicated verbs from the infinitive is identical to the derivation of past positive statement forms of unreduplicated intransitive verbs, dealt with in 2.3. The first stage of the derivations deletes the suffix segments only, the second stage replaces the whole tone pattern by HL.

Derivation of Past Pos.Intr. Statement for redupl. Set ItrP verbs

(9)	'to ask'	
a) Infinitive form	**popo-lɛ** M M -L	segmental tier tonal tier
b) Infinitive suffix deletion	**popo** M M -L	
c) Replace infinitive tone pattern by the tone pattern HL	**popo** H L	

d) Association convention **popo**
H L

e) Output **pópò**
past positive intransitive statement

2.5 DERIVATION OF THE PROGRESSIVE POSITIVE STATEMENT FORM

In the derivation of the progressive positive statement form from the infinitive.

a) there are no tonal changes
b) the suffix vowel assimilates to the last vowel of the root in backness and lowness.

formerly specified as:

(10)

$$\text{V} \dashrightarrow \begin{bmatrix} \alpha\ \text{back} \\ \beta\ \text{low} \end{bmatrix} \Big/ \begin{bmatrix} \text{V} \\ \alpha\ \text{back} \\ \beta\ \text{low} \\ \text{root} \end{bmatrix} \text{--} \qquad \begin{array}{l} \varepsilon \dashrightarrow \text{ɔ} \ /\text{o}\_ \\ \varepsilon \dashrightarrow \text{a} \ /\text{a}\_ \\ \varepsilon \dashrightarrow \varepsilon \ /\text{frontV}\_ \end{array}$$

[suffix]

Derivation of Progressive Positive Statement

(11)	'to stay a long time'	'to walk'	'to cry'
a) Infinitive	**bɛmo-lɛ** M M -L	**dru-lɛ** L -H	**bupɛ-lɛ** H H -H
b) Add progressive suffix -**ló**	**bɛmo-lɛ-lo** M M -L -H	**dru-lɛ-lo** L -H -H	**bupɛ-lɛ-lo** H H -H -H
c) Delete the segment [l] of the infinitive suffix -lɛ	**bɛmo-ɛ-lo** M M-L -H	**dru-ɛ-lo** L-H -H	**bupɛ-ɛ-lo** H H-H -H
d) Suffix vowel assimilation	**bɛmo-ɔ-lo** M M-L -H	**dru-ɔ-lo** L-H -H	**bupɛ-ɛ-lo** H H-H -H
e) Output progressive positive statement	**bɛ̄mōɔ̀ ló**	**drùɔ́ ló**	**búpɛ́ ɛ́ ló**

3. DERIVATION OF NEGATIVE AND QUESTION FORMS

3.0 INTRODUCTION

From the positive statement forms in the various tenses, aspects and transitivities, we can derive the corresponding negative and question forms by two simple derivations. These derivations are the same irrespective of the tense, aspect or transitivity of the positive statement form.

The arrows in the following schematic diagram (Figure 1) show the order in which the derivation must be applied in order to arrive at the positive and negative statement and positive and negative question forms.

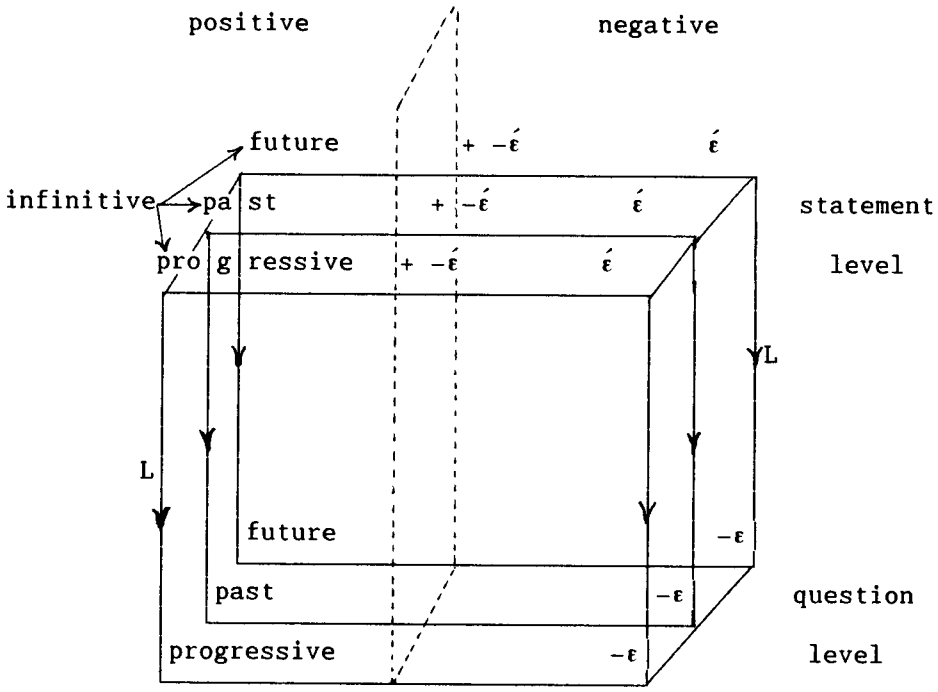

Figure 1

The positive statement form is derived from the infinitive as shown in the previous part of the paper. Adding the negative statement morpheme -ɛ́ with a H tone to the positive statement, we get the negative statement form.

The positive and negative question forms are obtained from the corresponding statement forms by adding the question morpheme, a L tone, to the far right of the tonal tier and applying a question low left spread rule, explained in detail in the appropriate section. As shown in the diagram we have two levels of expressions: the statement level and the question level. All questions are derived from the corresponding statement forms.

3.1 DERIVATIONS OF NEGATIVE STATEMENT FORMS

Negative statement forms are derived from positive statements by adding the negative statement morpheme -ɛ́. This is true for all tenses. The following display (Figure 2) shows the positive and negative statement forms, with verbs from all the sets formed in section 2.0 in the derivation of the positive statement forms for the various tenses, aspects and transitivities.

Two additional rules apply in special cases:

(12) If the verb root contains a nasalized vowel, the nasalization spreads to the negative statement suffix -ɛ́.
(13) In the section 'Past derivations for non-reduplicated verbs' (2.3) I stated that the intransitive tone pattern for the

intransitive past positive statement is HL. Verb roots of one syllable therefore HL glide and an extra step is needed in deriving the negative statement form. First the negative statement morpheme -ɛ́ is added. Then the L tone of the HL glide on the root is deleted. This is the only case where L tone disappears before the negative statement morpheme -ɛ́.

INFINITIVE with TONE PATTERN			SET	STATEMENT POSITIVE	STATEMENT NEGATIVE
bɛ̄dàlɛ́	'to measure'	MLH	Fu-1	**bɛ̄dǎ**	**bɛ̄dà-ɛ́**
			Progr	**bɛ̄dàáló**	**bɛ̄dàáló-ɛ́**
lɪ̄lálɛ́	'to pour out'	MHH	Fu-1	**lɪ̄lá**	**lílá-ɛ́**
			TrP-2	**lìlá**	**lìlá-ɛ́**
blābláléɛ́	'to speak' badly about somebody'	MHH	Fu-2	**blāblâ**	**blāblâ-ɛ́**
			TRP-1	**blàblà**	**blàblà-ɛ́**
kɔ̀nɪ̄lɛ́	'to bend' something' 'to bow'	LML	Fu-3	**kɔ̀nɪ̄**	**kɔ̀nɪ̄-ɛ́́**
			TRP-1	**kɔ̀nɪ̀**	**kɔ̀nɪ̀-ɛ́́**
			ItrP	**kɔ́nɪ̀**	**kɔ́nɪ̀-ɛ́́**
pōpōlɛ̀	'to ask something'	MML	Fu-4	**pōpò**	**pōpò-ɛ́**
			TrP-3	**pòpò**	**pòpò-ɛ́**

Figure 2

Example of rule (13):

INFINITIVE with TONEPATTERN			SET	STATEMENT POSITIVE	STATEMENT NEGATIVE
yrālɛ́	'to live'	ML	ItrP	**yrâ**	**yrá-ɛ́**
nūlɛ̀	'to come'	ML	ItrP	**nû**	**nú-ɛ́́**

Note, too, that in the negative statement form in set Fu-2 the HL glide of the positive statement form remains even when the negative statement morpheme -ɛ́ is added (see the Fu-2 forms for **blābláléɛ́** 'to speak badly about somebody' in the previous display).

3.2 DERIVATION OF QUESTION FORMS

All question forms are derived from the corresponding statement forms by adding the question morpheme L to the right of the tone pattern. This L tone, L^q, spreads leftwards converting every non-L tone to a L tone until it meets the first of one of the following boundaries:

either 1. a L tone
or 2. a left word boundary

or 3. a lexically specified boundary for this particular rule in a certain lexically defined subclass of verbs of class 4. example: **plɛ́+blè** 'to sell (past positive question)', where the plus sign is the boundary for the L spread.

This Question Low Left Spread (QLLS) rule is formally specified as:

(14) $BT_1T_2...T_nL_q$ BLL...LL

where B is one of the boundaries specified and $T_1, T_2, ...T_n$ is a sequence of tones none of which are L's.

3.2.1 Derivations of Future Positive Question: Examples

Derivation of Future Postive Question for Set Fu-1 verbs

(15)	'to cry'	'to unload'
a) Future positive statement	**bupɛ** H	**bla** MH
b) Add question morpheme	**bupɛ** H L	**bla** MHL
c) Question Low Left Spread	**bupɛ** L L	**bla** LLL
d) Tone contraction	**bupɛ** L	**bla** L
e) Association convention	**bupɛ** |/ L	**bla** | L
f) Output future positive question	**bùpɛ̀**	**blà**

In step c we see clearly that the QLLS - rule replaces all non-L tones by a L tone.

Derivation of Future Positive Question for Set Fu-2 verbs

(16)	'to speak badly about somebody'
a) Future positive statement	**blabla** M HL
b) Add question morpheme	**blabla** M HL
c) Question Low Left Spread blocked	
d) Tone contraction	**blabla** M HL
e) Association convention	**blabla** | |\\ M H L

f) Output **blābla̋**
future positive question
(same as future positive statement)

In step c we see how the QLLS rule is blocked by an already existing L tone.

Derivation of Future Positive Question for Set Fu-3 verbs

(17)	'to sell'
a) Future positive statement	**plɛ+ble** H M
b) Add question morpheme	**plɛ+ble** H ML
c) Question Low Left Spread (blocked by a lexically specified boundary '+' in a lexically defined subclass of class 4)	**plɛ+ble** H LL
d) Tone contraction	**plɛ+ble** H L
e) Association convention	**plɛ+ble** | | H L
f) Output future positive question	**plɛ́blè**

In this example the QLLS rule is blocked by a lexically specified boundary in a sub class of class 4.

3.2.2 Derivations of Past Positive Questions: Examples

Derivation of Past Trans. Positive Question for Set TrP-2 verbs

(18)	'to separate'	'to pour out'
a) Transitive past positive statement	**sīānā** LL H	**lila** L H
b) Add question morpheme	**sīānā** LL HL	**lila** L HL
c) QLLS rule	**sīānā** LL LL	**lila** L LL
d) Tone contraction	**sīānā** L	**lila** L
e) Association	**sīānā** |//	**lila** |/
	L	L
f) Output past transitive positive question	**sì̀ànà̀ lìlà**	

Derivation of Past Intrans. Positive Question for Set ItrP verbs

(19)	'to cry'	'to walk'
a) Intransitive past positive statement	**bupɛ** H L	**dru** HL
b) Add question morpheme	**bupɛ** H LL	**dru** HLL
c) QLLS blocked		
d) Tone contraction	**bupɛ** H L	**dru** HL
e) Association	**bupɛ** | | H L	**dru** |\ H L
f) Output past intransitive question (same as the past intransitive positive statement)	**búpɛ̀**	**drû**

3.2.3 Derivation of progressive positive question from progressive positive statement

(20)	'to stay a long time'	'to walk'	'to cry'
a) Progressive positive statement	**bɛmɔɔlo** M ML H	**druɔlo** LH H	**bupɛɛlo** H HH H
b) Add question morpheme	**bɛmɔɔlo** M ML HL	**druɔlo** LH HL	**bupɛɛlo** H HH HL
c) QLLS rule	**bɛmɔɔlo** M ML LL	**druɔlo** LL LL	**bupɛelo** L LL LL
d) Tone contraction	**bɛmɔɔlo** M M L	**druɔlo** L	**bupɛɛlo** L
e) Association convention	**bɛmɔɔlo** | |\/ M M L	**druɔlo** |/ L	**bupɛɛlo** |/ L
f) Output progressive positive question	**bɛ̄mɔ̄ɔ̀lò**	**drùɔ̀lò**	**bùpɛ̀ɛ̀lò**

In this example we see that the QLLS rule also works in the progressive question forms. The verb **bɛ̄mɔ̄ɔ̀lò** 'to stay a long time (PROGRESSIVE, QUESTION)' is not entirely lowered because the QLLS is blocked by an adjacent L.

4. DERIVATION OF NEGATIVE QUESTION FORMS

Negative question forms are derived from the corresponding negative statement forms.

Derivation of Future Negative Question for Set Fu-4 verbs

(21)	'to learn'	to ask'
a) Future negative statement	**dɔdɔ-ɛ** H L-H	**popo-ɛ** M L-H
b) Add question morpheme	**dɔdɔ-ɛ** H L-HL	**popo-ɛ** M L-HL
c) Question Low Left Spread	**dɔdɔ-ɛ** H L-LL	**popo-ɛ** M L-LL
d) Tone contraction	**dɔdɔ-ɛ** H L-L	**popo-ɛ** M L-L
e) Association convention	**dɔdɔ-ɛ** | | | H L-L	**popo-ɛ** | | | M L-L
f) Output future negative question	**dɔ́dɔ̀ɛ̀**	**pōpòɛ̀**

This example shows that the QLLS rule works in the future negative question.

Derivation of Past Transitive Negative Question of set TrP verbs

(22)	'to sell'	'to unload'
a) Past transitive negative statement	**plɛble-ɛ** H L-H	**bla-ɛ** L-H
b) Add question morpheme	**plɛble-ɛ** H L-HL	**bla-ɛ** L-HL
c) Question Low Left Spread	**plɛble-ɛ** H L-LL	**bla-ɛ** L-LL
d) Association convention	**plɛble-ɛ** | | | H L-L	**bla-ɛ** | | L-L
e) Output past transitive negative question	**plɛ́blèɛ̀**	**blàɛ̀**

This example shows that the QLLS rule also works for the Past Transitive Negative Question.

Derivation of Past Intrans. Negative Question of Set ItrP verbs

(23)	'to come'	'to walk'	'to go down'
a) Intransitive past negative Statement	**nũ-ɛ̃** H-H	**dru-ɛ** H-H	**bla-ɛ** H-H
b) Add question morpheme	**nũ-ɛ̃** H-HL	**dru-ɛ** H-HL	**bla-ɛ** H-HL
c) Question Low Left Spread	**nũ-ɛ̃** L-LL	**dru-ɛ** L-LL	**bla-ɛ** L-LL

d) Tone contraction	nũ-ɛ̃ L-L	dru-ɛ L-L	bla-ɛ L-L
e) Association convention	nũ-ɛ̃ | | L-L	dru-ɛ | | L-L	bla-ɛ | | L-L
f) Output	nṹɛ̃ drùɛ̀	blàɛ̀	

past intransitive negative question

This example shows the QLLS rule working in the Past Intransitive Negative Question.

Derivation of Progressive Negative Question

For the three verbs below, the progressive positive statement forms were derived from the infinitive in section 2.5 (11).

(24)	'to stay a long time'	'to walk'	'to cry'
a) Progressive negative statement	bɛmɔɔlo-ɛ M ML H-H	druɔlo-ɛ LH H-H	bupɛɛlo-ɛ H HH H-H
b) Add question morpheme	bɛmɔɔlo-ɛ M ML H-HL	druɔlo-ɛ LH H-HL	bupɛɛlo-ɛ H HH H-HL
d) Question Low Left Spread	bɛmɔɔlo-ɛ M ML L-LL	druɔlo-ɛ LL L-LL	bupɛɛlo-ɛ L LL L-LL
e) Association convention	bɛmɔɔlo-ɛ | ||/ | M ML -L	druɔlo-ɛ |/ | L -L	bupɛɛlo-ɛ |/ | L -L
f) Output	bɛ̃mɔ̃ɔ̀lòɛ̀	drùɔ̀lòɛ̀	bùpɛ̀ɛ̀lòɛ̀

progressive negative question

This example shows that the QLLS rule also works in the Progressive Negative Question form.

NOTES

[1]Beng is spoken by about 10,000 people in the east central part of ôote d'Ivoire, West Africa (about 100 km directly east of Bouaké), in the Prefecture of M'Banhiakro. Beng has not been mentioned by Maurice Delafosse (1901) nor by Greenberg (1963). Westermann and Bryan (1952) classify it as a member of the mandé-fu group, Le Saout (1973,p.5) as a member of the mandé-sud group.

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[2]There are three level emic tones in Beng: H M L

The following tone frame show the three tones in contrast:

(25) ŋ̀ɔ́ mɪ̄ yrí yēlɛ̀ 'I see your tree'
H M H M L

(26) ŋ̀ɔ́ mɪ̄ wɔ̄ yēlɛ̀ 'I see your arm'
H M M M L

(27) ŋ̀ɔ́ mɪ̄ mlà yēlɛ̀ 'I see your drum'
H M L M L

There are also three glides: HL ML LH

They are shown in contrast as follows:

(28) kā mlɛ̌ 'your chicken'
M LH

(29) kā zɔ̂ 'your sheet'
M HL

(30) kā sɪ̄ 'your palmtree'
M ML

The following phonetic glides have been heard: HM MH LM

Tone is written as follows:

H	tone as ◌́	HL	glide as ◌̂
M	tone as ◌̄	LH	glide as ◌̌
L	tone as ◌̀	ML	glide as ◌᷄
		MH	glide as ◌᷅

[3]In the derivation for the past intransitive positive statement, the whole infinitive tone pattern has to be replaced by a HL tone pattern -
- irrespective of the tone pattern on the infinitive and
- irrespective of the number of syllables in the verb stem

[4]The derivations of past intransitive statement forms are identical for reduplicated and non-reduplicated verbs.

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