

AC2 Phonology

Lesson 27 Tone Allophones

Outcomes

- Be able to make distribution charts for tone phonemes and predict the environments where tones occur.

Tone Phonemes Answers:

Yoruba tone melodies

VCV nouns

H

M ɔ̄bē ‘knife’

L àǵbà ‘adult’

HL

HM

ML ākpò ‘sack’

LH àkpá ‘arm’

LM àgā ‘chair’

MH ɔ̄gbá ‘stick’

CVCV nouns

kpákpá ‘field’

búrù ‘news’

rĩũ̄ ‘pain’

bàbá ‘father’

There are too many tone melodies for there to be only 2 underlying level tones. There must be 3 underlying level tones, High, Mid, Low. Also, there are 3 contrastive tone heights on the second syllable in the words ɔ̄gbá ‘stick’, ɔ̄bē ‘knife’, ākpò ‘sack’

Tone Phonemes Review How do we know when surface tones have different underlying tone?

[- - -]

[- - -]

[̄ - \]

ku-t̄ɔri 'horn'

ki-sibo 'ear'

ki-napu 'breast'

If the words have analogous environments, and tones in contrast have the same tone before and after, the surface tones have different underlying tone. The L tone on /t̄ɔ/ and M tone on /si/ have different underlying tone phonemes.

Content

So far, we have learned how to find how many contrastive tone melodies there are in a language. These tone melodies represent different underlying tone patterns. We have also learned how to tell how many underlying level tones there are in the languages. That is, we know how to find the tone phonemes. We know when individual surface tones are different than underlying tones. For this we need the same tone before and after the tone in contrast. However, we still don't know what each tone in the underlying form is. It could be High or it could be Mid underlying tone. Some of the surface tones could be tone allophones from different tone phonemes. In today's lesson, we will find the distribution of tone phonemes. There may be gaps in the tone phoneme distribution. If so, these represent either neutralization of tone phonemes, or places where tone phonemes becomes tone allophones. We will want to find these gaps and be able to predict where tone neutralization or tone allophones occur. So, the steps for today are C and D (read these).

Steps for finding how to write differences in meaning made by tone

(3 of 3)

17. Study the Tone System
 - A. Decide how many tone melodies there are
 - B. Decide how many underlying level tone phonemes (contrastive tone heights)
 - C. Find the tone phoneme distribution
 - D. Predict the environment for any tone neutralization and tone allophones
 - E. Find how to predict tone changes across morpheme and word boundaries
 - F. Find differences in grammar made by tone
 - G. Find the functional load of tone
 - H. Decide if/how to write tone in the orthography.

In previous lessons, we have found 7 contrastive melodies for ‘Beli in CVCV noun structures. This number of melodies means there are 3 different underlying level tones— High, Mid and Low. In some languages, after knowing which underlying level tones are present, we can make reasonable guesses at which tone is which in each word. For example, in the first row, all the tones are High in each of the three words. It is reasonable to guess that the underlying tone for these words is also High. In the second row, it’s reasonable to guess that the surface Mid tone is from underlying Mid tone. In the third row, the first tone of the word *m̄bala* ‘song’ is Low, but the second tone is Low-falling. Similarly, the first two tones of the word *ṭimara* ‘crocodile’ are Low, but the final tone is Low-falling. In a few minutes, we will talk about how it is common in African languages for Low tone to become Low-falling at the end of words said by themselves. So, we will find that the Low-falling tone is Low in the underlying form. In the fourth line, it is reasonable to guess the tones are underlying High and Low, even in the first word *bi* ‘dog’ that is only one syllable. We saw in Mende, that 2 tones on one syllable make a falling tone or rising tone. It is reasonable to think the same thing happens in this ‘Beli word with one syllable. In the other rows, it is reasonable to guess at the underlying tones to be the same as the surface tones. The only exception is that the Low-falling tone is underlying Low tone. Also, on words with one syllable, 2 tones coming together make falling tone as in *bi* ‘dog’ or rising tone as in *də* ‘grandparent’ and *pɪ* ‘bamboo’. Before moving on. Let’s look closely at the words. Find all the words where we have guessed there is underlying final Low tone. Look at the surface tone in each of these words. What do you notice about the surface tone for these underlying final Low tones? (get response) They each have Low-falling tone in the surface form. What about the other underlying Low tones that are not at the end of words? What about their surface tone? (get response) They all have level Low tone in the surface form.

Tone Melodies in ‘BELI Sudan

There must be 3 underlying tones: High, Mid, Low. From the surface melodies, we can make reasonable guesses at the underlying tone phonemes of each.

	CV	CVCV	CVCVCV
H	[]	[]	[]
	<i>ḍa</i> ‘meat’	<i>ɲɔɾɔ</i> ‘poison’	<i>kuɾuβu</i> ‘dove’
M		[]	
		<i>cere</i> ‘star’	
L	[]	[]	[]
	<i>ha</i> ‘cow’	<i>m̄bala</i> ‘song’	<i>ṭimara</i> ‘crocodile’
HL	[]	[]	[]
	<i>bi</i> ‘dog’	<i>ḡbaⁿḍa</i> ‘cassava’	<i>kɪlɪja</i> ‘stick’

HM		[$\bar{\text{H}}$ -]		
		hɔlɔ	‘buttock’	
LH		[- $\bar{\text{H}}$]		[- $\bar{\text{H}}$ $\bar{\text{H}}$]
		kabɪ	‘roof’	ɖɔhaji ‘land’
LM	[$\bar{\text{L}}$]	[- -]		[- - -]
	də	‘grandparent’	g̃bɛɾɪ	‘child’
				akaca ‘donkey’
MH	[$\bar{\text{L}}$]	[- $\bar{\text{H}}$]		[- $\bar{\text{H}}$ $\bar{\text{H}}$]
	pɪ	‘bamboo’	^m baja	‘wing’
				kɔ ^m bɪlɪ ‘finger’

In words with L and HL tone melody, the Low tone at the ends of words becomes Low-falling. This is a common process in African languages. The Low tone always becomes Low-falling tone at the ends of words said by themselves. The Low tone remains Low tone in other environments. Level Low tone never remains level Low tone at the ends of words. So, the Low and Low-falling are in mutually exclusive environments. Their environments don’t overlap. They never occur in the same place in words. We can make a rule for this predictable tone change. We write it like this. The Low tone becomes Low-falling at the ends of words said by themselves, but remains Low tone elsewhere. The Low falling tone is a tone allophone of the underlying Low tone phoneme.

‘BELI Sudan

L	[-]	[- \searrow]		[- - \searrow]
	ha	‘cow’	m̄bala	‘song’
				ɕimara ‘crocodile’
HL	[\searrow]	[$\bar{\text{H}}$ \searrow]		[$\bar{\text{H}}$ $\bar{\text{H}}$ \searrow]
	bi	‘dog’	g̃ba ⁿ ɖa	‘cassava’
				kɪlɪja ‘stick’

In many African languages, when words are said by themselves (in isolation), underlying Low tone at the end of the word has the sound Low-falling. So the Low-falling sound in m̄bala [- \searrow] ‘song’ and g̃baⁿɖa [$\bar{\text{H}}$ \searrow] ‘cassava’ is a tone allophone of the underlying Low tone phoneme.

Word-final Low-falling

/L/ → [L falling] at end of a word said by itself
 → [L] elsewhere

/- -/ → [- \searrow]
 /m̄bala/ → m̄bala ‘song’
L → L falling

Earlier in our course, we learned about rules for predicting where phonemes become allophones. For example, we had the Lumun allophone [ɣ] in [kayɛk] ‘tree type’. The phoneme /k/ becomes this allophone in-between vowels, but remains /k/ in other

environments. The ‘Beli Low-falling tone allophone is similar to this Lumun segment allophone. The Low tone phoneme becomes the Low-falling tone allophone at the ends of words said by themselves. Both the Lumun allophone [ɣ] and the ‘Beli Low falling tone allophone are in predictable environments. Both only occur in these predictable environments, and never occur elsewhere. Both are not contrastive with the phoneme they come from. So they are both allophones.

Segment allophone

Lumun (Sudan)

[ɣ] in [kayɛk] ‘tree type’

Voicing and weakening

/k/ → [ɣ] in-between vowels
 → [k] elsewhere

/kəkək/ → [kayɛk] ‘tree type’
 /kəβɪk/ → [kəβɪk] ‘rain’

Tone allophone

‘BELI Sudan

[L] in mbala [- ˩] ‘song’

Word-final Low-falling

/L/ → [L falling] at end of a word said by itself
 → [L] elsewhere

/- -/ → [- ˩]
 /mbala/ → mbala ‘song’
 L → L falling

In another previous lesson of this course, we learned about the distribution of phonemes. That is, all the environments in words where phonemes occur. We made charts for these distributions. You may remember making a chart for the first and second vowel combinations in words. For example, we had this distribution chart for Mundari. The first vowel is one of those down the left side of the chart. The second vowel is one along the top. Where the vowels come together in a word, we place an X in the chart.

Distribution of vowel phoneme combinations in 2 syllable words

MUNDARI Sudan (8-vowel system)

First vowel Second vowel

	i	u	ɛ	ɔ	a	i	u	ə
i	x	x	x	x	x			

u	x	x	x	x	x			
ε			x	x	x			
o	x		x	x	x			
a	x	x	x		x			
i						x	x	x
u						x	x	x
ə						x	x	x

We can do the same thing for tone combinations. We list the different underlying level tones down the left side and across the top. From the ‘Beli CVCV words we have already seen, we can make an X for most of the places in the chart. For instance, the word ɲɔɔ ‘poison’ has High and High together in the same word, so we place an X where these tones come together in the chart. The word hɔɔ ‘buttock’ has the tone High and Mid, so we place an X where these tones come together in the chart. Similarly for the rest of the CVCV words. After we have placed an X for all the tone combinations of our words, we look for gaps. What gap do you see? (get response). There is not Mid, Low combination in these words. When we find a gap like this, we should then look for the missing combination in other syllable structures. For example, look back at the ‘Beli CVCVCV syllable structure. Do we see any words with Low tone after Mid tone? No. What about in CV structures? No. In fact, after looking through all the words in ‘Beli, we don’t find with Low tone after Mid tone. So, this must be an important gap. It is probably not just a gap that will be filled in when more data is collected. This is the special gap we call neutralization.

Distribution of Tone phoneme combinations

in ‘BELI Sudan CVCV nouns

Second Tone

First Tone

	H	M	L
H	X	X	X
M	X	X	
L	X	X	X

[H H] H,H ɲɔɔ ‘poison’

[H M] H,M hɔɔ ‘buttock’
[L M]

[H L] H,L ɡbaⁿɖa ‘cassava’ [3 4]

M,H	^m baja ‘wing’	M,M	cere ‘star’	M,L	
	[– ˉ]		[– –]	[– ˘]	
L,H	kabr ‘roof’	L,M	gbɛɾi ‘child’	L,L	m̄bala ‘song’

We don't find M,L in any other parts of speech. We don't find L after M anywhere in 'Beli.

You may remember that neutralization is a lack of contrast of phonemes in one environment, even though contrast between the phonemes occurs in another environment. For example, we saw that Gaahmg has a clear contrast of voiceless and voiced phonemes in beginning word position. /p/ contrasts with /b/ in the words pāḍá ‘rope’ and báḍà ‘bowl’. So, both /p/ and /b/ are phonemes. But there is no contrast between these phonemes in any other word positions. Voiceless plosives don't occur in the middle of words or at the ends of words. Only voiced plosives occur in these places. So, we say that the contrast between the voiceless plosives and the voiced plosives is neutralized in middle and final word positions.

Neutralization of segment phonemes

GAAHMG Sudan

	<u>Initial</u>		<u>Medial</u>		<u>Final</u>
p	pāḍá ‘rope’				
c	cāā ‘bath’				
k	káál ‘fence’				
b	báḍà ‘bowl’			jíləb ‘spring’	
ɟ	ɟāā ‘boy’	bàɟwáár ‘bird t.’		bìmiríɟ ‘bird t.’	
g	gāàl ‘falcon’	bāḡḍàrs ‘lizard’		gààḡ ‘bird t.’	

Neutralization: The contrast between voiceless plosives /p/, /c/, /k/ and voiced plosives /b/, /ɟ/, /g/ is neutralized in medial and final word positions.

The same thing happens for tone phonemes in 'Beli. In the last lesson, we saw a clear contrast between Low-falling, Mid, and High tones in Beli. This 3-way contrast of tones comes after beginning Low tone and at the end of the word. So, we know there are 3 underlying level tone phonemes in 'Beli.

'BELI Sudan words said by themselves

[– ˘]		[– ˉ]		[– ˉ]
m̄bala ‘song’		gbɛɾi ‘child’		kabr ‘roof’

There are 3 phonetic pitches, and 3 contrastive heights in the analogous environment of the second syllable. (However, **L falling** tone is an allophone of **Low** tone.)

The High and Mid tone are in contrast in several environments. Look at the examples below. Do you see how High and Mid tone are contrastive in each of the different environments? For example, in *ɲɔɔ* ‘poison’, High follows High tone. In *hɔɔ* ‘buttock’, Mid follows High tone. So, High and Mid tone are contrastive in this environment after High tone. In the words *mbaja* ‘wing’ and *cere* ‘star’, High and Mid both follow Mid tone. So, both High and Mid are contrastive after Mid tone. Similarly in the next column where High and Mid tone are contrastive after Low tone. However, in the last column, we see that only High tone can come before Low tone. Mid tone never comes before Low tone. So, High and Mid tone are not contrastive before Low tone. Rather the contrast between High and Mid is neutralized before Low tone. Only High occurs in this environment.

Neutralization of tone phonemes

‘BELI Sudan

H and M are contrastive after H, after M, and after L. So, both H and Mid tone are tone phonemes.

	<u>After H</u>	<u>After M</u>	<u>After L</u>	<u>Before L</u>
	[<u> </u>]	[<u>-</u> <u> </u>]	[<u>-</u> <u> </u>]	[<u> </u> <u> </u>]
H	<i>ɲɔɔ</i> ‘poison’	<i>mbaja</i> ‘wing’	<i>kabɪ</i> ‘roof’	<i>ḡbaⁿɗa</i> ‘cassava’
	[<u> </u> <u>-</u>]	[<u>-</u> <u>-</u>]	[<u>-</u> <u>-</u>]	
M	<i>hɔɔ</i> ‘buttock’	<i>cere</i> ‘star’	<i>ḡbeɾɪ</i> ‘child’	

Neutralization: The contrast between H and M is neutralized before L. In this environment, only H occurs.

We can make a tone rule to predict this environment where the tone contrast is neutralized. Since Mid tone does not occur before Low tone, we can guess that it becomes High before Low tone. For example Mid tone becomes High tone before Low tone in the word *ḡbaⁿɗa* ‘cassava’. It remains Mid tone in other environments. For example, Mid tone remains Mid before Mid in *cere* ‘star’. We can call this rule a dissimilation rule. Dissimilation means becoming unlike the sound near it. It is the opposite of assimilation. High tone is less like Low tone than Mid tone. In this rule, the underlying Mid tone becomes High so that it is less like the following Low tone. Although dissimilation processes are not as common as assimilation processes, they are somewhat common in African languages. There are 2 reasons why this dissimilation rule is a good choice in the language. 1) Low tone is usually stronger than H or M tone African languages. This means Low tone affects other tones, but Low tone is usually not affected by other tones. {Optional: In our rule, we say that

underlying Mid tone becomes High tone because of the following Low tone. It would be strange to have the opposite. For example, it would be strange to say that Low tone becomes Mid tone after High tone, such as in the word $h\acute{o}l\flat$ [̄ -] ‘buttock’. This is an alternative way of writing the rule, but would not fit the data very well. This would be an assimilation process where Low tone becomes more like the High tone it follows. However, Low tone does not become Mid tone after High tone in other languages. Low is strong and is not affected by other tones.} A second reason the rule is a good choice, is because there are many roots in ‘Beli with phonetic HL melodies. The underlying ML melodies may become some of the phonetic HL melodies. So, it is reasonable to say that underlying Mid tone becomes High tone to make more HL surface tone melodies. {Optional: The opposite is not reasonable. We should not have the rule that underlying Low tone becomes Mid tone after High tone. This is because there are very few roots with HM tone melodies. The word $h\acute{o}l\flat$ [̄ -] ‘buttock’ is the only one found so far. It is not reasonable to say that Low tone becomes Mid tone after High tone since this would make many words with HM melody. Besides, if we have the rule the Low becomes Mid after High, this contradicts many words in our data such as $\widehat{g}b\acute{a}^n\grave{d}\grave{a}$ [̄ \] ‘cassava’ with HL tone. We would not be able to predict when Low becomes Mid after High and when Low remains Low after High.}

Mid Tone Raising (Dissimilation) (‘BELI Sudan)

/M/	→ /H/ before L	/- -/	[̄ \]
	→ /M/ elsewhere	$\widehat{g}b\acute{a}^n\grave{d}\grave{a}$	→ $\widehat{g}b\acute{a}^n\grave{d}\grave{a}$ ‘cassava’
		/ML/	→ [HL]
		/- -/	[̄ -]
		/cērē/	→ cere ‘star’
		/MM/	→ [MM]

- Dissimilation means becoming unlike the sound near it. It is the opposite of assimilation. The underlying M tone becomes H so that it is less like the following L tone. Both dissimilation and assimilation are common processes in African languages.
- L tone is usually stronger than H or M in African languages. It is common for L tone to affect other tones. It is not common for H or M to affect L tone.
- There are many roots in ‘Beli with phonetic HL melodies. The underlying ML melodies may become some of the phonetic HL melodies.

Now, let’s return to the tone melodies in Chumburung nouns. There are 3 contrastive tone melodies in kV-CVCV nouns, and 4 contrastive melodies in kV-CVη nouns. However,

these nouns are more complex than the ‘Beli or Youruba nouns. These all have the noun class prefix *kV-*. So there are 2 morphemes in each noun. The *kV-* prefix is one morpheme and the noun root is the other. Remember that tone melodies attach to morphemes. So, both the morphemes in each word may have a tone melody. In *ki-sibɔ* ‘ear’, there may be a tone melody on *ki-* and there may be a tone melody on the root *sibɔ*. In the previous lesson, we learned there are 2 underlying level tones in the language—High and Low. As you remember, we found there are 2 tones by the contrast in analogous environments. That is, in the words *ki-sibɔ* ‘ear’ and *ku-tʃɔri* ‘horn’, there is Low tone at the beginning each and Mid tone at the end of each. So the Mid and Low tones on the middle syllables must be in contrast. They must have different underlying level tones, High and Low. So, we know there is High and Low underlying level tones in the language. But, we don’t know yet the underlying tone for all the words. For example in *ki-napu* [̄ ̄ \] ‘breast’ and *ki-baŋ* [- \] ‘paddle’, we don’t know yet which surface melody has which underlying level tones. And, we don’t know if *ki-sibɔ* [- -] ‘ear’ has underlying L-H or H-H or some other underlying pattern. Two morphemes come together in each of these words. There may be two tone melodies coming together with each of the morphemes. When the tones come together, they may change in the surface form. So, the words are too complex. We cannot even make a reasonable guess at the underlying tone at this point. We will need to study more data before we can make reasonable guesses at the underlying tone in this language.

Tone Melodies in CHUMBURUNG Ghana (Snider)

kV-CVCV has 3 contrastive tone melodies when said by themselves

[- -]	[- -]	[̄ ̄ \]
<i>ki-sibɔ</i> ‘ear’	<i>ku-tʃɔri</i> ‘horn’	<i>ki-napu</i> ‘breast’

kV-CVŋ has 4 contrastive tone melodies when said by themselves

[- -]	[- \]	[̄ \]	[- \]
<i>ku-sun</i> ‘work (n)’	<i>ki-baŋ</i> ‘paddle’	<i>ki-laŋ</i> ‘hip’	<i>ki-paŋ</i> ‘cutlass’

- There are 2 morphemes in each word—the root and the prefix *ki-/ku-/ku-*.
In *ki-sibɔ* ‘ear’, *ki-* is a morpheme and *sibɔ* is a morpheme.
- Each morpheme may have its own underlying tone melody. In *ki-sibɔ* ‘ear’, there may be a tone melody on *ki-* and there may be a tone melody on *sibɔ*.
- We know there are 2 underlying level tones in the language (H and L), but we don’t know yet which surface melody has which underlying level tones. We don’t know if *ki-sibɔ* [- -] ‘ear’ has underlying L-H or H-H or some other underlying pattern.
- The two morphemes coming together may cause the underlying tones to change in the surface form. We cannot even make a reasonable guess at the underlying tone without more study.

Let's now look at some other words in Chumburung. These 3 words are from a different noun class. The noun class has no segmental prefix, so it may be that the words are single morphemes, that is, roots. Each of the words have a different tone melody. The words are in an analogous group because they are all nouns in the same noun class, having the same syllable structure. So, the differences in surface tone must be because of different underlying tone melodies. Notice that there are 3 different surface tone heights in the words. High in the first word, Low and Mid in the second, and Low also in the third. However, as you remember from a previous lesson, there are no more than 4 contrastive tone melodies in Chumburung, so there are only 2 underlying level tones in the language. This is also seen by the analogous environments in these words for the tone phonemes. Look at the words kɔɾɪ [- ˥] 'monkey' keri [- ˨˨˩] 'lizard'. Do you see a contrastive environment to show there are 2 tone phonemes? (get response) In kɔɾɪ 'monkey', Mid tone follows Low tone, and in keri 'lizard' Low-falling tone follows Low tone. So, the Mid and Low-falling tones have the same tone before them and are contrastive. They must be from different underlying phonemes. The previous Chumburung nouns each had 2 morphemes and 2 tone melodies. But these words may only have 1 morpheme and 1 melody. So, we can make reasonable guesses at their underlying tones. We guess that furi 'deer' has underlying High tone, keri 'lizard' has underlying L tone, and we guess that kɔɾɪ 'monkey' has underlying LH tone. The surface tone of keri 'lizard' is Low, Low falling. But it is common in African languages for underlying Low tone to surface as Low-falling at the ends of words said by themselves. So, it is reasonable to guess that the tone of keri 'lizard' is underlying Low for both syllables. The surface tone of kɔɾɪ is Low, Mid tone. But since there is no evidence for a third underlying level tone, we guess that the two tones in this word are Low and High.

CVCV has 3 contrastive tone melodies when said by themselves

[˥ ˥]	[- ˥]	[- ˨˨˩]
furi 'deer'	kɔɾɪ 'monkey'	keri 'lizard'

- There is only 1 morpheme in each word—each word is a root.
- The words are in an analogous group, so the roots must have different underlying tone melodies.
- There are 3 phonetic tone heights in the words (High, Mid, Low), but only 2 contrastive underlying tone heights in the analogous environment of the second syllable. kɔɾɪ [- ˥] 'monkey' keri [- ˨˨˩] 'lizard'
- Since there is only one tone melody in each word, we can make reasonable guesses at the underlying melodies as follows:

[˥ ˥]	[- ˥]	[- ˨˨˩]
furi 'deer'	kɔɾɪ 'monkey'	keri 'lizard'

H LH ? L

Now let's talk about the tone phoneme distribution in Chumburung. How should we make a distribution chart? There are only 2 underlying level tones, High and Low. So, we make a chart with these tones on the left for the first tone in a word, and the tones on the top for the second tone in a word. The chart is supposed to represent underlying phonemes. But so far, we only know the underlying phonemes in a few words. That's ok, well do the best we can. The gaps may help us know what to look for and where tones are changing. Let's look at the CVCV nouns without a prefix that were in the previous slide. How would these words fill in the chart? In *furi* 'deer' we have High and High, in *keri* 'lizard' we have Low and Low, and in *koti* 'monkey' we might have Low and High. The underlying tone of the last word should be checked with other data. Does High tone become Mid after Low in all other words? If so, we need to make a rule for this sound change. We will check this out in a minute. So far, we only have 3 boxes in the distribution filled in. We need to see if there are other words in the language that might fill in the final box. Are there any words that might have High and Low tone? There is the noun *ki-napu* 'breast' in the analogous group with kV-CVCV. This noun has surface H,H,HL for its three syllables. It is possible this word has underlying High and Low tone in its root. But we will need to check this out with other data and make a rule for the sound change.

Tone Distribution in CHUMBURUNG CVCV nouns

Second Tone

	H	L
H	X	
L	X	X

	[- -]		[- - \]
H,H	<i>furi</i> 'deer'	H,L ?	<i>ki-napu</i> 'breast'
	[- -]		[- \]
L,H ?	<i>koti</i> 'monkey'	L,L	<i>keri</i> 'lizard'

The word *koti* 'monkey' with L,M tone could have underlying L,H tone. The word *ki-napu* 'breast' with H,H-falling tone in the root could have underlying H,L tone.

Let's now see if we find High tone becoming Mid after Low in other words. We think this might be happening in *koti* 'monkey'. We now look for this change in other words. What do you see in these 4 words? (get response) Each of the words have Mid tone after Low tone. None of the words have High tone after Low. If we look at all the words in

Chumburung, we would find this same pattern. We would never find High after Low. We only find phonetic Mid after Low. So, we can make a rule for this tone change. We write the rule like this. Underlying High tone becomes Mid tone after Low tone as in kɔɾɪ ‘monkey’, but remains High tone in other environments as in furi ‘deer’. In the previous lesson, we found Mid tone is contrastive with Low tone in Chumburung. But Mid tone is never contrastive with High tone. We never find Mid and High tone following the same tone. We never find Mid and High tone coming before the same tone. So, Mid tone is an allophone of High tone in Chumburung.

CHUMBURUNG Ghana (Snider)

We never find phonetic H after L. We only find phonetic M after L.

[- -]		[- - -]	
kɔɾɪ	‘monkey’	ku-tʃɔɾɪ	‘horn’
[- -]		[- - -]	
ku-suŋ	‘work (n)’	ki-sɪbɔ	‘ear’

High Tone Lowering

/H/ → [M] after L

→ [H] elsewhere

/ - - /	[- -]	/ - - /	[- -]
/kɔɾɪ/	→ kɔɾɪ ‘monkey’	/furi/	→ furi ‘deer’
/L,H/	→ [L,M]	/H-H/	→ [H-H]

H is never contrastive with M in Chumburung. So, [M] is an allophone.

Now, let’s take a closer look at the High falling tone. We saw this High falling tone in kɪnɒpu ‘breast’. We guessed it might have underlying High Low in the root. We guess this because the High Low tone pattern is the only melody we have not found. This word kɪnɒpu ‘breast’ might fill in the remaining gap in the phoneme distribution chart.

Previously, we found 4 contrastive melodies in the noun class with kV-CVŋ. These are words like ku-suŋ ‘work’. Because there are 4 contrastive melodies, the underlying HL melody must be one of them. But which one is it? Which of the four words with kV-CVŋ do you think is most likely to have underlying HL tone in the root? (get response) Our best guess at this melody in this noun class is the word kɪnɒpu ‘hip’. Again, this word has the High-falling tone, just like in the word kɪnɒpu ‘breast’.

Tone Melodies in CHUMBURUNG Ghana (Snider)

kV-CVCV has 3 contrastive tone melodies when said by themselves

[- - -]	[- - -]	[- - \]			
ki-sɪbɔ	‘ear’	ku-tʃɔɾɪ	‘horn’	ki-nɒpu	‘breast’

kV-CVn has 4 contrastive tone melodies when said by themselves

[- -]	[- \]	[- \]	[- \]
ku-suŋ ‘work (n)’	ki-baŋ ‘paddle’	ki-laŋ ‘hip’	ki-paŋ ‘cutlass’

So, these two words ki-ŋapu ‘breast’ and ki-laŋ ‘hip’ have the High falling tone. In what environment does the High falling tone occur? (get response) The High falling comes after High tone. In fact, if we looked at all the words in Chumburung, we would never find the High falling tone after Low tone. Also, we would never find Low tone after High. However, we do find High after High in words like ki-sibo ‘ear’. So, High falling is contrastive with High. This tells us the High falling is a combination of the tones High and Low on the same syllable. The High-falling tone is not an allophone since it is a combination of two tone phonemes. How would you write this rule? Take 2 minutes to do this. How did you write it? (get response) We could say something like the Low tone phoneme becomes High falling after High tone, but remains Low elsewhere.

CHUMBURUNG Ghana (Snider)

Exercise 1: How would you write a rule for the following?

We never find phonetic L after H.

We only find phonetic H, and H falling after H.

[- - -]	[- - \]	[- \]
ki-sibo ‘ear’	ki-ŋapu ‘breast’	ki-laŋ ‘hip’

The Low tone phoneme becomes High falling after High, as in ki-ŋapu ‘breast’.

High Tone Rightward Spreading

/L/ → /H falling/ after H

→ /L/ elsewhere

/ - - - /	→	[- - \]
ki-ŋapɔ	→	ki-ŋapɔ ‘breast’
/H-H,L/	→	[H-H,HL]

H falling is never contrastive with L in Chumburung. But it is contrastive with H.

So, /H falling/ is a combination of H and L and is not an allophone.

Try another one. In Chumburung, we only have Low falling tone at the ends of words said by themselves. We never find phonetic Low tone in this environment. What do you think is happening with this Low falling tone? Is it the same tone change that happens in ‘Beli’?

Could you make a rule for this tone change? Take 2 minutes to try. What is your rule?
(Get response).

Exercise 2: How would you write a rule for the following?

We never find phonetic L at the ends of words said by themselves. We only find phonetic L falling.

[$\bar{\quad}$ \]	[$\bar{\quad}$ \]
ḡba ⁿ da 'cassava'	keri 'lizard'

The Low tone phoneme becomes the Low falling tone allophone after Low, as at the end of keri 'lizard'. It remains Low tone elsewhere, as at the beginning of keri 'lizard'. L falling is never contrastive with L in Chumburung. So, L falling is an allophone of L.

Low falling

/L/ → [L falling] at end of a word said by itself

→ [L] elsewhere

/ – – / [$\bar{\quad}$ \]

keri → keri 'lizard'

/L,L/ → [L,L $\bar{\quad}$ falling]

L falling is never contrastive with L in Chumburung.

So, [L falling] is an allophone of L.

Class Assignment:

1. Say how many underlying level tone phonemes (contrastive tone heights) there are in Yoruba. Give the evidence.
2. Make a distribution chart comparing first and second tones in Yoruba VCV or CVCV nouns. List any gaps in the distribution.
3. Predict the environment where tone neutralization and tone allophones occur in nouns. Or if there is none, say so.

Reading Assignment

A Guide to Phonological Analysis pg 80-81

Tone Analysis for Field Linguists (2.4 - 2.6) pg. 33-39; (5.5) pg. 125-133.