LINGUISTICS 321 **Lecture #9**
Phonology

TONES AND AUTOSEGMENTAL PHONOLOGY

Review:

TONE: a pitch that has a phonemic role (= different meaning!)

> **Tone language:** A language in which differences in meaning can be signaled by differences in pitch.

e.g., Nupe (spoken in Nigeria)

bá (high)	ba (mid)	bà (low)
'be sour'	*'cut'*	*'count'*

LEVEL or **REGISTER TONES**: Tones that do not change pitch (e.g., Nupe).

CONTOUR TONES: Tones that change pitch on a single syllable.

e.g., Mandarin

ma	*mother*	(high level)
má	*hemp*	(high rising)
mă	*horse*	(low rising)
mà	*to scold*	(falling)

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Linear approach: every segment is a self-contained list of features. However, *tone*, *nasality* and *tongue-body features* may belong to *sequences of segments*.

SPE tonal features: [+hightone] or [-hightone]
This feature specification for tones would work if each word would have syllables either + or - for the feature [hightone]: in other words, *every* vowel in the word would have to be specified.

What about if, for example, a word consist of six segments, but only one tone?

If tonal features and other features were represented in separate levels, we would be able to have *different numbers of entities in the two tiers,* (for example, six segments but only one tone).

Segments (consonants and vowels) on the one hand, and *tones* on the other, are represented on separate **tiers**.

Tones have **autosegmental** status.

Tonal patterns of words are represented in a two-tier model.

Tonal transcription:

(a = any vowel)

high tone: á
mid-high tone: a̍
mid tone: a
low tone: à

Vata (a language spoken in the Ivory Coast)

a̍ lá ‘you call’ a̍ la̍ ‘you carry’

à la̍ ‘we call’ à la ‘we carry’

à là ‘we carried’

UR for ‘call’ : /la̍/

Feature representation of tone:

	[higher]	[peripheral]
high	+	+
mid-high	+	-
mid	-	-
low	-	+

[+higher] → [+peripheral] / [+higher] # C ____

Rule #1:

A HIGH OR MID-HIGH TONE BECOMES HIGH WHEN PRECEDED BY ANOTHER HIGH OR MID-HIGH TONE.

UR for 'carry' : /la/

Rule #2:

A MID TONE BECOMES MID-HIGH WHEN PRECEDED BY ANOTHER MID-HIGH TONE.

Derivation

UR	/ à la/ 'we call'	/ à la/ 'we carry'	/a la/ 'you call'	/a la/ 'you carry'
RULE #1	-	-	a lá	-
RULE #2	-	-	-	a la
PR	[à la]	[à la]	[a lá]	[a la]

PROBLEM: à là 'we carried'

The appearance of the low tone cannot be due to phonological causes (the same verb appears with a mid tone after the same pronoun: à la 'we carry') We need to include grammatical information:

Rule #3:

A MID TONE BECOMES LOW IN THE PERFECTIVE ASPECT.

From the above it seems that it is possible to describe tonal phenomena using the formalism of classical generative phonology (our theoretical framework).

However, this linear approach to phonology (i.e., involving sequences of feature matrices) is no longer taken seriously.

J. Goldsmith. 1976. *Autosegmental Phonology*. MIT Press.

- An approach which contrasts with strictly *segmental phonology*

linear arrangement of segments

- The autosegmental theory sees phonology as comprising several *tiers* , each tier consisting of a linear arrangement of segments; these linked to each other by *association lines* which indicate how they are coarticulated.

IGBO (a language spoken in Nigeria)

ó cì àkhwá ‘he was carrying eggs’
he carry eggs

ó zà úlò ‘he must sweep the house’
he sweep house

ézà cì àkhwá ‘the chief was carrying eggs’
chief carry eggs

ùwà cì àkhwá ‘Uwa was carrying eggs’

(Note: nouns may end in a high tone or a low tone).

ékwê cì àkhwá ‘Ekwe was carrying eggs’

àdhâ cì àkhwá ‘Adha was carrying eggs’

[ˆ]: falling tone

In isolation *ékwé* and à*dhá* end in high tones.

Question: Why should a high tone become a falling tone before a low tone?

HH#L#LH → H HL # L # LH

Tone level	H	H	#	L	#	L	H
Segmental level	ek	we		ci		akh	wa

H	H	#	L	#	L	H
|	|		|		|	|
ek	we		ci		akh	wa

The low tone of the verb spreads to its left:

H	H	#	L	#	L	H
|	| /		|		|	|
ek	we		ci		akh	wa

The final vowel of *ékwê* has two tones associated with it: the high tone, which forms part of the lexical representation, followed by a low tone which has spread from its right. Here, we have two units on the tonal level associated with a single segment.

Nouns ending in a low tone underwent no change:

L	L	L	L	H
|	|	|	|	|
u	wa	ci	akh	wa

L	L	L	L	H
|	| / |		|	|
u	wa	ci	akh	wa

The final vowel of *uwa* is associated with two low tones: its lexical tone (low) and the tone that spread from the verb (low).

Generative phonology:

[+high tone] → [+falling]/ ____ # [+low tone]

Problem: There is an arbitrary relation between [+falling] and [+low tone]. The rule would look just as plausible in this form:

[+high tone] → [+falling] / ____# [+high tone]

The fact that in Igbo the first process happens is treated as an accident.

Relating a structural change to the context in which it occurs is the most important contribution of autosegmental phonology: Phonological phenomena are no longer treated as random events.

That falling tones are formed before a low tone and not before a high tone is not considered as an accident.

A phonological process is expressed by a direct connection of some part of the phonological representation of a neighbouring segment.

Autosegmental approach to Vata phonology:

á lá ‘you call’ a la ‘you carry’

à la ‘we call’ à la ‘we carry’

à là ‘we carried’

Vata perfective tones: add a low tone to the <u>imperfect form</u>

↓

neutral tone (= default tone): there is *no* lexical tone for certain verbs.

If *T* is some tone and *V* is some vowel:

T
|
V = Imperfective

T L
|
V = Perfective

Lexical representation of a toneless verb:

__
V

Toneless verb plus perfective suffix:

__ L
V

Association Convention:

L
\
V

In Igbo: A high tone will change to a falling tone when followed by a low tone.
Compare this process to where a high tone becomes a rising tone before a low tone.

In linear phonology, there is no reason to expect to find one phenomenon rather than the other. Both are expressible in feature notations.

In autosegmental phonology only the former process is permitted; the latter is deemed inexpressible in autosegmental theory.

TO THE EXTENT THAT AUTOSEGMENTAL THEORY IS CAPABLE OF EXPRESSING EXACTLY THE SET OF OBSERVED TONAL PHENOMENA AND NOTHING ELSE, IT CONSTITUTES A STEP FORWARD IN THE EXPLANATORY POWER OF PHONOLOGICAL THEORY.

For more details: Kaye, Jonathan. 1989. *Phonology: A cognitive view*. Hove and London: Lawrence Earlbaum Associates. 81-98.