



**University of
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Phonology

Part II:

Phonological processes in synchrony and diachrony

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Phonological processes

- Assimilation
- Dissimilation
- Epenthesis
- Deletion
- Lengthening
- Shortening
- Metathesis
- Neutralization

Assimilation

Parameters

- phonetic properties that are assimilated
 - partial assimilation
 - total assimilation
- direction of the assimilation
 - progressive
 - regressive
- sounds that are assimilated
- sounds that trigger an assimilation

Assimilation

Parameters (cont'd)

- further distinction:
 - long-distance assimilation
 - assimilation of adjacent sounds

Example: Luganda (Katamba 1989)

mbala	'I count'	ntema	'I cut'
mpa	'I give'	ɲɔgala	'I like'
mmala	'I finish'	ɲɲumja	'I converse'
ndaga	'I show'	ɲcoppa	'I become destitute'
nsika	'I pull'	ɲkola	'I work'
nneɲa	'I blame'	ɲgula	'I buy'

Dissimilation

- parameters are the same as for assimilation
- example: Kirundi (Katamba 1989)

<i>Imperative</i>	<i>1st pers. PL present</i>	<i>Gloss</i>
rja	turja	'eat'
mwa	tumwa	'shave'
bona	tubona	'see'
soma	dusoma	'read'
seka	duseka	'laugh'
kubita	dukubita	'hit'

- motivations for dissimilation?

Epenthesis

- addition of one or more sounds to a word
- motivations:
 - ease of pronunciation
 - creation of simpler syllables
 - to fulfill word property constraints
- example: English: /z/ 'PL'

/bæg-z/ [bægz] 'bags'

/hæt-z/ [hæts] 'hats'

/feis-z/ [feis-ɪz] 'faces'

/dɪʃ-z/ [dɪʃ-ɪz] 'dishes'

/feiz-z/ [feiz-ɪz] 'phases'

/bi:tʃ-z/ [bi:tʃɪz] 'beaches'

Deletion

- syncope: deletion of a word-internal vowel
CV.CV.CV > CVC.CVC
- apocope: deletion of a word-final vowel
CV.CV > CVC
- other types of deletion
- diachronic development:
 - shortening of unstressed vowels
 - shortening of consonants
 - assimilation of consonants

Lengthening and shortening

- often dependent on stress and/or syllable:
 - vowels of stressed syllables tend to be lengthened
 - vowels of unstressed syllables tend to be shortened
 - vowels of open syllables can be lengthened or shortened
 - vowels of closed syllables tend to be shortened
- further diachronic development:
 - deletion of shortened sounds
 - longer life for longer sounds

Metathesis

- re-arranging of sounds or syllables
- often involves the switching of two or more adjacent sounds
- however, the involved sounds do not have to be adjacent
- motivations for metatheses
 - ease of pronunciation
 - to obtain better syllables or syllable boundaries
- examples:
 - English: *ask* > *aks*, *relevant* > *revelant*, *nuclear* > *nucular*
 - French verlan: *métro* > *tromé*, *français* > *céfran*

Neutralization

- contrast not available in a particular environment
- often involves syllable codas
- example: only voiceless (but not voiced) obstruents after syllable-initial /s/ in English (/sp st sk/ are OK, but */sb sd sg/ are not OK)
- another example: noun class prefixes in Luganda only allow /i a u/, other syllables also allow /e o/, e.g.
 - mu-sota, mi-sota 'snake(s)' ki-ntu, βi-ntu 'thing(s)'
 - mu-ntu, βa-ntu 'person(s)' ka-tale, βu-tale 'market(s)'

Some theoretical approaches

Phonological processes in synchrony

- Derivational Phonology (> seventies)
- Optimality Theory (> Prince & Smolensky 1993)

Phonological processes in diachrony

- Evolutionary Phonology (> Blevins 2004)

Derivational Phonology

- surface forms (phonetic forms) are derived from underlying forms through rules
- example: palatalization in Kinyarwanda
 - rule: the velar stops /k g/ are realized as the palatal stops [c ɟ] before the front vowels /e i/
 - or more formal: [-son, +back] → [-back] / ____ [-cons, -back]

Underlying representation	/gukata/	/kugenda/	/umugi/
	-----	/kuɟenda/	/umuɟi/
Surface representation	[gukata]	[kuɟenda]	[umuɟi]

Derivational Phonology

- rules can interact with each other
- example: Luganda (Katamba 1989)
 - rule A: glide formation: the high vowels /i u/ become the nonsyllabic glides /j w/ when they are followed by other vowels:
/mu-ojo/ → [mwojo] ‘soul’ /li-anda/ → [ljanda] ‘coal’
 - rule B: root-initial /j/ can optionally be deleted in some contexts:
/tu-jagala/ → [twa:gala] ‘we like’
 - rule B creates the context for the application of rule A: feeding
- rule orders:
 - feeding: R1 triggers R2
 - bleeding: R1 blocks R2
 - counterfeeding: R1 can trigger R2, but R2 has to be applied before R1
 - counterbleeding: R1 can block R2, but R2 has to be applied before R1

Optimality Theory

Principles

- Two layers of representation (as in generative phonology), called input and output representation
- Phonological generalizations are not expressed through rules but rather through so-called constraints
- The constraints are universally valid
- The grammars of the world's languages are characterized by tendencies which are in conflict with each other. These tendencies can be expressed through the constraints
- The constraints are ranked language-specifically
- Constraints can be violated, but the violation has to be minimal


Optimality Theory

Components of the OT grammar (Kager 2004:19)

- **Lexicon:** contains lexical representations (or underlying forms) of morphemes, which can be the input to:
- **Generator (Gen):** generates output candidates for some input, and submits these to:
- **Evaluator (Eval):** the set of ranked constraints, which evaluates output candidates as to their harmonic values, and selects the optimal candidate

Optimality Theory

Tableau representation

/Input/	CONSTRAINT 1	CONSTRAINT 2	CONSTRAINT 3
[Candidate a]	*!		**
 [Candidate b]		*	



Optimal candidate

*

Constraint violated

**

Constraint violated twice

!

Violation fatal

[shaded]

Violation can be neglected since the optimal candidate is already evaluated


[dashed]

Constraints unranked

Optimality Theory

Example: syllable structure in Luganda (McCarthy 2003)

Vowels are always long before prenasalized consonants: compensatory lengthening after nasal leaves the coda and joins the following syllable

/muntu/	NO-CODA	MAX	UNIF
 a. [mu:. ⁿ tu]			*
b. [mun.tu]	*!		
c. [mu:.tu]		*!	

NO-CODA: coda not permitted

MAX: no deletion

UNIF: UNIFORMITY (faithfulness constraint against coalescence)

Evolutionary Phonology

Aim: explanation of typological distributions of sound patterns (Blevins 2006)

- Why are certain sound patterns extremely common, while others are rare?
- What factors play a role in determining similar sound patterns across languages?
- What is the ultimate explanation for the striking similarity between recurrent context-dependent instances of sound change and recurrent alternation types across the world's languages?

Evolutionary Phonology

Premises

- Diachronic explanations of sound changes have priority over synchronic explanations
- Extra-phonological explanations of sound changes have priority over competing phonological explanations (distinguishes Evolutionary Phonology from Generative Phonology and Optimality Theory)

Evolutionary Phonology

Hypotheses (supported by empirical studies)

- A common sound pattern is usually the result of a common phonetically motivated sound change
- A rare sound pattern is not the result of a common phonetically motivated sound change
- Diachronic explanations for synchronic properties of certain sound patterns are better than synchronic explanations
- Sound change is not teleological (goal-oriented)
- A rare sound pattern can be rare due to sound change or due to an accidental gap

Evolutionary Phonology

Potential sources of similarity in sound patterns (Blevins 2007)

- direct inheritance
- indirect inheritance (contact, prescriptive norms, literacy)
- phonetic factors (articulatory, aerodynamic, perceptual)
- language-specific factors (lexical, structural, self-organizing)
- cognitive factors (including potential linguistic universals)
- chance

Evolutionary Phonology

Model of sound change: 3 types (Blevins 2004)

- **Change:** The phonetic signal is misheard by the listener due to perceptual similarities of the actual utterance with the perceived utterance
- **Chance:** The phonetic signal is accurately perceived by the listener but is intrinsically phonologically ambiguous, and the listener associates a phonological form with the utterance which differs from the phonological form in the speaker's grammar
- **Choice:** Multiple phonetic signals representing variants of a single phonological form are accurately perceived by the listener, and due to this variation, the listener acquires a prototype or best exemplar of a phonetic category which differs from the phonological form in the speaker's grammar

Thank you!