Cyclic and Non-Cyclic Morphology

1.0 Introduction

- Topic today: interactions between morphology and phonological processes, resulting in **allomorphy**.
- Two major take-away points:
  - Not all phonological processes result in allomorphy
  - Not all morphemes participate in allomorphy

2.0 Phonological processes that do NOT result in allomorphy

- In one respect, the interaction between morphology and phonology is trivial: phonological processes operate over strings produced when we assemble words and phrases, and morphemes are a subset of those strings, so of course phonological processes affect the pronunciation of morphemes.

(1) Flapping

a. Flapping rule

/t,d/ —> [D] / V́___V

b. Flapping examples

a.	ládder	/d/	—>	[D]
b.	látter	/t/	—>	[D]
c.	átom	/t/	—>	[D]
d.	atómic	/t/	—>	[t^h] (see below)
e.	rider	/d/	—>	[D]
f.	writer	/t/	—>	[D]

g. She'll **ride her** bike tomorrow.

(Bobaljik 2002)

- The flapping rule applies whenever it can – i.e., wherever its *structural description* is met.
- It applies everywhere:
  - internal to a single morpheme (a,c)
  - across morpheme boundaries (b,e,f)
  - even across words (in fast speech) (g)

- Rules that affect the the prounciation of morphemes in this trivial sense we will call **across-the-board rules (ATB rules)**. They are also known as **post-lexical** rules, I'll probably say this sometimes. (In your reading this week they were referred to as **phrasal** rules, which is not a term I will likely use).
  - ATB rules apply wherever they can, i.e. wherever the structural description of the rule is met
  - They are insensitive to morphological complexity. (Bobaljik 2002: unit 5)
  - They are so pervasive, speakers are typically unaware of their existence and effects – it takes training to "hear" them.

- Some other examples of ATB rules in English: Canadian raising, aspiration of voiceless stops.

(2) Canadian raising

aj -> ʌj / ___ C
æw -> ʌw [-voice]

e.g.	write	[rʌjt]	vs.	ride	[rajd]
	wife	[wʌjf]		wives	[wajvz]
	fife	[fʌjf]		five	[fajv]
	house	[hʌws]		houses	[hæwzəz]

(Bobaljik 2002)

(3) Aspiration of voiceless stops

/p,t,k/ —> /p^h, t^h, k^h/ when simple syllable onsets

eg.	pit [p^hɪt]	vs.	spit: [spɪt]	NOT: [sp^hɪt]
	cat [k^hæt]	vs.	scat: [skæt]	NOT: [k^hæt]

(Bobaljik 2002)

Surface alternations produced by ATB rules are NOT considered allomorphs!

Some general properties of ATB rules:

a. ATB rules can "create" new allophones, e.g.: [D], [p^h], [ʌj]
(None of these occur in underlying representations in English)
b. Automatic, exceptionless.
c. Insensitive to morphological structure:
monomorph: ladder [lædər], house [hʌws]
bimorphemic: latter [lædər], pouter [pʌwDər]

3.0 Phonological processes that result in allomorphy

- There is another class of rules, however, which are far more interesting to morphologists:

(4) g-deletion

a. finger		b. singer	
[fɪŋ.gər]	*[fɪ.ŋər]	*[sɪŋ.gər]	[sɪ.ŋər]

c. g-deletion rule: ŋ.gər —> .ŋər

(Bobaljik 2002)

  - The rule in (c) *must* apply to (b) but it *cannot* apply to (a).
  - What's the difference between 'finger' and 'singer'?

- g-deletion is an example of a rule that only applies in morphologically **derived environments** . A derived environment is one that is created by morphological concatenation, i.e. it includes a morphological boundary. We will refer to such rules as **morphologically-sensitive (MS)** rules or **cyclic** rules. (They are also sometimes called **lexical** rules or **morphophonological** rules).
- Cyclic rules are triggered by affixation

- Some other examples of MS rules triggered by cyclic affixes:

(5)

a.	k → s	public, publication, publicly vs. publicize, publicity electric, eletrical vs. electricity
b.	t → s	democrat vs. democracy
c.	g → dj	analog vs. analogy

(6) Palatalization

/s/ → /S/ / ___ high vowel/glide

face, facing vs. facial
race, racing, racer vs racial

- Some properties of Morphologically Sensitive Rules:
  - Sensitive to morphological structure and triggered only by certain morphemes
  - Do not apply to non-derived (i.e., simple) words.
  - Typically relate one phoneme to another /s/ → /S/, /k/ → /s/
  - Often have lexically specified exceptions

(Bobaljik 2002)

3.0 Cyclic vs. Non-cyclic affixes

- We can classify affixes according to whether or not they trigger MS/cyclic rules. Those that do we will call **cyclic** affixes. Those that do not we will call **non-cyclic** affixes. Another set of terms sometimes used for this distinction is **non-neutral** (=cyclic) vs **neutral** (=non-cyclic) affixes.

(7) Cyclic affixes

strategy	strategic
morpheme	morphemic
democrat	democratic
detain	detainee
absent	absentee
employ	employee

  - What phonological changes are triggered by affixation of *-ic* and *-ee* ?

(8) Non-cyclic affixes

abstract	abstractness
serious	seriousness
alert	alertness
parade	parader
destroy	destroyer
believe	believer

  - What phonological changes are triggered by affixation of *-ness* and *-er* ?

- The difference between cylic and non-cyclic affixes has been analyzed in different ways. One influential proposal was to treat this as evidence for a stratified lexicon. This is known as the theory of **lexical phonology** or **lexical morphology**.
  - On this view, the lexicon is divided into **strata** or **levels**
  - Cyclic and non-cyclic affixes belong to distinct strata/levels

- Another influential proposal, which is the one we will follow, is to simply treat the distinction between cylic and non-cyclic affixes as a lexical property (i.e. a property that must be listed in our lexical entries).
  - Early generative proposals related this property to the nature of the morphological boundary introduced by an affix:
    - Cyclic affixes: **weak** boundaries (+)
    - Non-cyclic affixes: **strong** boundaries (#)

(9) Stress shift+

a.	operate	operation
	imitate	imitation
b.	productive	productivity
	inclusive	inclusivity
c.	grammar	grammarian
	history	historian

(10) Trisyllabic laxing (TSL)

a.	divine	divinity
b.	serene	serenity
c.	obscene	obscenity
d.	sane	sanity
e.	vane	vanity

TRI-SYLLABIC LAXING: $V \rightarrow$ [-tense] / ___ . σ . σ . #

- applies in environments where an underlyingly tense vowel is followed by 2 syllables.
- See Katamba and Stonham on Great Vowel Shift and the inventory of tensed/lax vowels in English.

4.0 Ordering effects between cyclic and non-cyclic affixes

- An observation that has made about cyclic vs non-cyclic affixes is that cyclic affixation happens before non-cyclic affixation. Two pieces of evidence for this are:
  - Affix ordering
  - Blocking effects

4.1 Affix ordering

(11) *-ism* vs. *-ian*

Mendel	Mendel-ian
Mongol	Mongol-ian
grammar	grammar-ian
Shakespeare	Shakespeare-ian

race	racism
alcohol	alcoholism
absentee	absenteeism
career	careerism

(Katamba and Stonham)

- What are the syntactic categories of *-ism* and *-ian*?
- What are their subcategorization properties?
- Based on these properties alone, what do you predict about affix ordering?

(12) *-ism* vs. *-ian* again

Mendel-ian-ism
Mongol-ian-ism
grammar-ian-ism
Shakespeare-ian-ism

*Mendel-ism-ian
*Mongol-ism-ian
*grammar-ism-ian
*Shakespeare-ism-ian

(Katamba and Stonham)

- This ordering restriction is not explained by subcategorization and category. It is explained if we posit that cyclic affixation must precede non-cyclic affixation.

- In the theory of lexical morphology, ordering effects were explained by positing that the levels/strata in the lexicon were ordered (level 1=cyclic morphology, level 2=non-cyclic morphology). Word-formation was thought to have to proceed in order through the levels.
- Another proposal is that ordering effects result because cyclic affixes are **root attaching**, i.e. they have root attachment as a selectional requirement, whereas non-cyclic affixes do not have this requirement.

4.2 Blocking effects

- The availability of a cyclic affix tends to block application of non-cyclic affixes with the same function.

(13) applicant, *applier
accountant, *accounter

participant, %participator
intoxicant, %intoxicator

(cf. Katamba and Stonham, p.127)

- **Conversion** is an interesting case to look at. It has been argued that nouns derived from verbs by conversion involve affixation of a cyclic null affix, whereas verbs derived from nouns by conversion involve a non-cyclic null affix.

(14) Deverbal nouns (conversion by cyclic null affix)

Verb	→	Noun
sur'vey		'survey
tor'ment		'torment
pro'test		'protest

(Katamba and Stonham, p.120)

(15) Denominal verbs (conversion by non-cyclic null affix)

Noun	→	Verb	
'pattern		'pattern	*pat'tern
'patent		'patent	*pa'tent
'lever		'lever	*le'ver

(Katamba and Stonham, p.120)

- The availability of a cyclic affix that produces deverbal nouns has been argued to account for the unavailability of otherwise productive *-er* affixation (e.g. *keep, keeper*; *make*,*maker*; *read, reader*; *walk, walker*)

(16) Conversion with cyclic affix blocks derivation with non-cyclic affix

bore	*borer
drill	*driller
spy	*spier
judge	*judger

(Katamba and Stonham, p. 127)

  - V>N conversion results from cyclic affixation, which applies before non-cyclic affixation and correlates with meaning 'one/thing that Xs'
  - This is argued to block -er affixation, which likewise takes V as input and produces N with meaning 'one/thing that Xs'.