Class 10
Cyclicity in Phonology

18.06.2021

1 Introduction to Cyclicity

- In the last unit:

(1) **Opacity:** Some process applies contrary to expectation because of the way it interacts *with other processes*.

- In this unit:

(2) **Cyclicity:** Some process applies contrary to expectation because of the way it interacts *with morphology*.

- Why is it called *cyclicity*? Chomsky & Halle (1968:15):

(3) "It is well known that English has complex prosodic contours involving many levels of stress and pitch and intricate processes of vowel reduction. It is clear even from a superficial examination that these contours are determined in some manner by the surface structure of the utterance. Furthermore, it is natural to suppose that in general the phonetic shape of a complex unit (a phrase) will be **determined by the inherent properties of its parts and the manner in which these parts are combined**, and that similar rules will apply to units of different levels of complexity. These observations suggest a general principle for the application of rules of the phonological component, namely, what we shall call the principle of the **'transformational cycle'**. Regarding the surface structure as a labeled bracketing [...], **we assume as a general principle that the phonological rules first apply to the maximal strings that contain no brackets, and that after all relevant rules have applied, the innermost brackets are erased; the rules then reapply to maximal strings containing no brackets**, and again innermost brackets are erased after this application; and so on until the maximal domain of phonological processes is reached. In terms of the tree representation of a surface structure [...], the rules apply to a string dominated by a particular node A only after they have already applied to the strings dominated by each of the nodes dominated by A." (emphasis mine)

⋆ **To sum up:** rules apply first to inner constituents, and then again to larger and larger constituents as words and phrases are built up.
- *One version of (morpho)phonological cyclicity*: do a round of phonology each time you add an affix.
- *Cyclicity in, e.g., syntax*: do a round of syntactic operations on the most embedded constituent, and then another on the next most embedded constituent, etc.

→ By having rules apply *cyclically*, i.e. to nested constituents, certain process interactions can become *opaque*.

2 English stress and models of cyclicity

- Cyclic phonology often (but certainly not always) has something to do with stress.
  → Namely, the stress pattern you get in morphologically complex words differs from what you get in simplex words, in a way that tracks the morphological structure somehow.

- In English, monomorphemic 4 syllable words with all light syllables (final can be heavy but not superheavy) stress the antepenult (4a). *peripheral* (4b) is not simplex, but ends up with that stress pattern anyway.
- In English, monomorphemic 6 syllable words with all light syllables stress the antepenult and the initial (4c). However, *periphality* shows a different stress pattern (4d), with its secondary stress the 2nd syll not the first. **Why?**

(4) **Stress in simplex vs. complex words in English**

	4 SYLLABLE WORDS		6 SYLLABLE WORDS		
SIMPLEX	a. *Connecticut*	[kʰə.né.rə.kɪt]	c. *Mesopotamia*	[mɛ̀.sə.pə.tʰéɪ.mi.ʌ]	(*[mə.sòʊ.pə.tʰéɪ.mi.ʌ])
COMPLEX	b. *peripheral*	[pʰə.ɹí.fə.rəl]	d. *peripherality*	[pʰə.ɹì.fə.rǽ.lɪ.ɾi]	(*[pʰɛ̀.ɹə.fə.rǽ.lɪ.ɾi])

⋆ ***perì**pherálity* stresses its second syllable because ***perí**pheral* does.

2.1 Cyclic rule application

- We can describe the stress facts in (4) as follows:

(5) a. Put primary stress on the antepenult
b. Put secondary stress on the initial, unless it creates a clash ([pʰə.ɹí.fə.rəl] ≻ *[pʰɛ̀.ɹí.fə.rəl])

- We can generate *perìpherálity* by applying these two rules **twice**, first to the inner constituent *peripheral*, then to the whole constituent.
  - ∗ There also needs to be a rule/convention to demote already-assigned primary stresses to secondary stresses each time rule (5a) applies.

(6) **English stress: cyclic rule application**

First Cycle	/*peripheral*/	/*mesopotamia*/
AP STRESS	*per**í**pheral*	*mesopot**á**mia*
INIT STRESS	(blocked by clash)	***mè**sopot**á**mia*
Second Cycle: add *-ity*	/*per**í**pheral-ity*/	**No Second Cycle**
AP STRESS	*per**ì**pher**á**l-ity*	n/a
INIT STRESS	(blocked by clash)	n/a
	[*per**ì**pher**á**l-ity*]	[***mè**sopot**á**mia*]

→ The attractiveness of cyclic rule application was that you could use the same grammar with simple rules, applied iteratively to larger and larger constituents, to derive the phonology of both morphologically simplex and complex forms.

2.2 Leixcal Phonology & Morphology and Stratal OT

⋆ Problem is, it doesn't always work out as well as with this case. By and large, you need *different grammars* (rule blocks or constraint rankings) for different "cycles"(or "strata" or "levels").

- The version of cyclic rule application that allows for different grammars at different cycles is called "Lexical Phonology and Morphology (LPM)" (Kiparsky 1982, inspired by Pesetsky 1979, Mohanan 1982).
- This same concept implemented with constraints is called "Stratal OT" (sometimes LPM-OT) (Kiparsky 2000 et seq., Bermúdez-Otero 2018).

∗ Because of the way OT works — i.e. that it considers all possible candidates and all possible inputs — some cases where you could get away with a single rule-based grammar applied cyclically require different constraint grammars.

- While it might not appear so at first, English is such a case:

- If StressL ranks below *Clash, we derive the [0100] in *peripheral*.
- If StressL also ranks below Max[stress]-IO, that stress will be protected once we get to Level 2, again preventing initial stress because of *Clash.

(7) **Second syll stress in *peripherality* in Stratal OT** (to be revised)

Level 1

/peripheral/	*ExtLapse	ExtNonFin	*Clash	Max[stress]-IO	StressL
a. ☞ perípheral [0100]					*
b. pèrípheral [2100]			*!		
c. pèriphéral [2010]		*!			
d. péripheral [1000]	*!				

↪ Level 2 (has the same grammar)

/perípheral-ity/	*ExtLapse	ExtNonFin	*Clash	Max[stress]-IO	StressL
a. perípheral-ity [0100-00]	*!				
b. ☞ perìpherál-ity [0201-00]					*
c. pèrìpherál-ity [2201-00]			*!		
d. pèripherál-ity [2001-00]				*!	

- This ranking generates first syllable stress in long monomorphemic forms like *Mesopotamia*, because there is no second-syllable stress to be faithful to.

(8) **First syll stress in *Mesopotamia* in Stratal OT**

Level 1

/mesopotamia/	*ExtLapse	ExtNonFin	*Clash	Max[stress]-IO	StressL
a. mesópotamia [010000]	*!				
b. mesòpotámia [020100]					*!
c. mèsòpotámia [220100]			*!		
d. ☞ mèsopotámia [200100]					

- But there's a problem with Richness of the Base: if there happened to be an underlying second-syllable stress in a long monomorphemic word, it would get protected too, incorrectly:

(9) **Incorrect prediction: second syll stress in underived words in Stratal OT**

Level 1

/σσσσσσ/	*ExtLapse	ExtNonFin	*Clash	Max[stress]-IO	StressL
a. σσσσσσ [010000]	*!				
b. 💣 σσσσσσ [020100]					*
c. σσσσσσ [220100]			*!		
d. ☹ σσσσσσ [200100]				*!	

- In other words, if we had the same grammar at Level 1 and Level 2, we'd predict a lexical stress contrast in long words, which we don't observe.

→ Therefore, we actually do need to have different grammars:

(10) **Stratal OT rankings for English stress**

a. Level 1: $\mathbb{M} \gg$ StressL $\gg$ Max[stress]-IO

b. Level 2: $\mathbb{M} \gg$ Max[stress]-IO $\gg$ StressL

⋆ In Stratal OT, *cyclic effects* are the result of a change from $\mathbb{M} \gg \mathbb{F}$ (e.g. StressL $\gg$ Max[stress]-IO) at an earlier level to $\mathbb{F} \gg \mathbb{M}$ (e.g. Max[stress]-IO $\gg$ StressL) at a later level.

∗ LPM and Stratal OT build in restrictiveness to the theory by positing a limited number of strata, usually 3:
→ Stem, word, Phrase

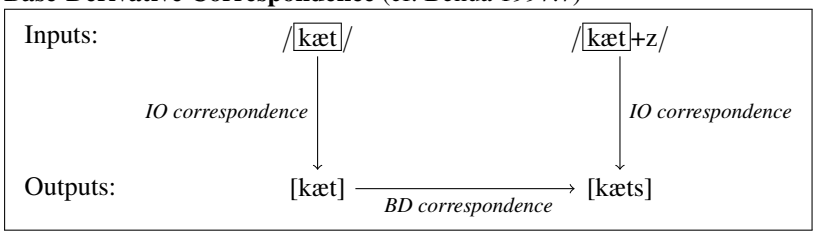
- Cophonology Theory (e.g. Inkelas 1998, Inkelas & Zoll 2005, 2007) is essentially Stratal OT with an unlimited number of strata.

2.3 Output-Output / Base-Derivative Correspondence Theory

⋆ But there is a way to get "cyclic" effects without a literal cycle: Output-Output / Base-Derivative Correspondence Theory (Benua 1995, 1997, Burzio 1996, Kenstowicz 1996, Kager 1999, *et seq.*).

- In this theory, there is a separate dimension of correspondence/faithfulness that holds between a derivative and a lexically-related "base": Base = [Root(+affix$_{1\ldots n}$)] → Derivative = [[Root(+affix$_{1\ldots n}$)]+affix$_{n+1}$]

(11) **Base-Derivative Correspondence** (cf. Benua 1997:7)



- Faithfulness along the BD dimension can cause processes (i.e. markedness constraints) to misapply (13), but only if it enhances similarity to the base.

(12) ***peripheral* in Parallel OT w/ BD-Correspondence**

INPUT: /peripheral/ BASE: NONE	*EXTLAPSE	EXTNONFIN	*CLASH	**MAX[stress]-BD**	STRESSL
a. ☞ perípheral [0100]				*not applicable*	*
b. pèrípheral [2100]			*!		
c. pèriphéral [2010]		*!			
d. péripheral [1000]	*!				

(13) ***peripherality* in Parallel OT w/ BD-Correspondence**

INPUT: /peripheral-ity/ BASE: [perípheral] ([0100])	*EXTLAPSE	EXTNONFIN	*CLASH	**MAX[stress]-BD**	STRESSL
a. perípheral-ity [0100-00]	*!				
b. ☞ perìpherál-ity [0201-00]					*
c. pèrìpherál-ity [2201-00]			*!		
d. pèripherál-ity [2001-00]				*!	

- Since we are enforcing second-syllable stress with BD-faithfulness, IO-faithfulness can be ranked low enough to avoid the overgeneration problem identified for the "same grammars" Stratal OT analysis:

(14) **Low IO-faithfulness in Parallel OT w/ BD-Correspondence**

INPUT: /mesópotamia/ BASE: NONE	$\mathbb{M}$	MAX[stress]-BD	STRESSL	MAX[stress]-IO
a. mesòpotámia [020100]		*not applicable*	*!	
b. ☞ mèsopotámia [200100]				*

⋆ Stratal OT splits up rankings, Parallel OT w/ BD correspondence splits up faithfulness constraints:

(15) a. **Stratal OT:**
LEVEL 1: $\mathbb{M} \gg \mathbb{F}_{IO} \rightarrow$ LEVEL 2: $\mathbb{F}_{IO} \gg \mathbb{M}$

b. **Parallel OT w/ BD correspondence:**
$\mathbb{F}_{BD} \gg \mathbb{M} \gg \mathbb{F}_{IO}$

3 Cyclic opacity in Levantine Arabic: Stratal OT vs. BD-Correspondence

- Levantine Arabic has a syncope processes which **underapply** in particular circumstances in certain morphologically complex words (Brame 1974, Kenstowicz & Abdul-Karim 1980).
  - → The exact same interaction holds for a shortening process in the language as well.
    - ∗ For the BD analysis, cf. Kager (1999); for the Stratal OT analysis, cf. Kiparsky (2000).

3.1 Basic phonotactics

3.1.1 Stress

- Stress placement is weight sensitive within a trisyllabic right-edge window:

(16) **Stress placement**

1.	Final if super-heavy (CVːC, CVCC)	katáb-t	'I wrote'	staʃáːr	'he consulted'
	CVCC# optionally(?) broken up by (post-lexical) epenthesis; stress does not shift				
2.	Else, penult if heavy (CVː, CVC)	katáb-na	'we wrote'	staʃáːr-u	'they consulted'
3.	Else, antepenult	kátab-u	'they wrote'		
		kátab	'he wrote' (*no antepenult, so penult*)		

- Some relevant constraints (each is defined over syllables) and rankings:

(17) **Stress constraints**

a. WSP($\geq 3\mu$) $\gg$ NONFINALITY (katábt $\succ$ kátabt) [(18)]
b. NONFINALITY $\gg$ WSP($\geq 2\mu$) (kátab $\succ$ kataáb) [(19)]
c. WSP($\geq 2\mu$) $\gg$ EXTNONFINALITY (katábna $\succ$ kátabna) [(20)]
d. *EXTLAPSER undominated (stress never further left than the antepenult)

(18) **Final stress if final is superheavy**

/katab-t/		WSP($\geq 3\mu$)	NONFINALITY
a. ☞	katábt		*
b.	kátabt	*!	

(19) **Non-final stress if final is not superheavy**

/katab(-Ø)/		NONFINALITY	WSP($\geq 2\mu$)
a.	kataáb	*!	
b. ☞	kátab		*

(20) **Penult stress if penult is heavy**

/katab-na/		NONFINALITY	WSP($\geq 2\mu$)	EXTNONFINALITY
a.	katabná	*!	*	*
b. ☞	katábna			*
c.	kátabna		*!	

- Stress constraints are never violated in service of the other constraints in the analysis, and apply normally regardless of morphological complexity. (*Only exception*: stress ignores post-lexical epenthetic vowels.)

3.1.2 Syncope (normal application)

- Stressless high vowels delete in open syllables. (Stress applies transparently.)

(21) **Syncope**

1ST SYLLABLE SYNCOPE	a.	/fi̱him-t/	→	[fhímt]	'I understood'
	b.	/fi̱him-na/	→	[fhímna]	'we understood'
2ND SYLLABLE SYNCOPE	c.	/fihi̱m-u/	→	[fíhmu]	'they understood'
NO SYNCOPE	d.	/fihim-Ø/	→	[fíhim]	'he understood'

- In a serial model, we can assign stress first and then use that information to help decide what to delete.
- If we are doing stress and syncope in parallel, this is more complicated but still doable.
  - We can determine (normal application) syncope site just with reference to phonotactic constraints, without faithfulness to stress position.

- Deletion motivated by the ranking:

(22) **Syncope ranking:** *i]$_\sigma$ ≫ MAXV-IO

- Deletion normally occurs even if it creates an initial cluster (*i]$_\sigma$ ≫ *#CC).

(23) **Syncope can create initial cluster**

/fihim-t/		*i]$_\sigma$	MAXV-IO	*#CC
a. fihímt		*!		
b. ☞ fhímt			*	*

- In cases like (21b) /fihim-na/ → [fhímna] (24b), deleting the second vowel (24c) could close the first syllable, and thus satisfy the markedness constraint. This can be excluded if syncope cannot create CCC strings (*CCC ≫ *#CC).

(24) **Syncope can't create medial CCC cluster**

/fihim-na/		*i]$_\sigma$	*CCC	*#CC
a. fihímna		*!		
b. ☞ fhímna				*
c. fíhmna			*!	

- When there are multiple possible syncope sites that avoid CCC clusters (21c) /fihim-u/ → [fíhmu] (25c), syncope targets the second. This is because targeting only the first (25b) would still leave an [i] in an open syllable.

(25) **Syncope prefers medial cluster to initial cluster**

/fihim-u/		*i]$_\sigma$	*#CC	*CC
a. fihímu		*!*		
b. fhímu		*!	*	*
c. ☞ fíhmu				*

- **Question:** How do we explain the blocking of syncope in (21d) /fihim-Ø/ → [fíhim]?

- **Answer:** NONFINALITY $\gg$ *i]$_\sigma$
  - Failing to syncopate (/fihim/ $\rightarrow$ [fíhim]) provides a non-final syllable that can bear stress.
  - Whereas syncopating (/fihim/ $\nrightarrow$ *[fhím], *[fíhm]) would have forced stress to fall on the final.

(26) **Syncope blocked by NONFINALITY in CVCVC**

/fihim-Ø/		NONFINALITY	*i]$_\sigma$
a. ☞	fíhim		*
b.	fhím	*!	
c.	fíhm	*!	

- By using phonotactics (syllable well-formedness & stress), we can capture the normal distribution of syncope without serialism (i.e. faithfulness to the stress of intermediate forms).

3.2 Object clitics

- The [Verb+Subj] complex can be followed by object clitics: [[Verb+Subj]Obj]. When there is an overt object, there is no object clitic.

→ This implies that these are indeed clitics not affixes, or at least a different kind of affix than subject agreement. This difference is reflected in the phonology...

3.2.1 Data

- Object clitic paradigms for different subjects are given in (27). (A · represents a syncope site.)
  - The 1PL subject + overt obj. clitic forms are extrapolated. I'm not sure what this dialect does with V-V sequences; stress placement in the -VC suffix forms could be wrong. This shouldn't affect any of the relevant points.
  - I'm not exactly sure how the 2SG.M C-initial object forms interact with epenthesis.

(27) **Syncope in object clitic construction**

		SUBJECT			
		3SG.M	3SG.F	2SG.M	1PL
		/fihim-Ø-X/	/fihim-at-X/	/fihim-t-X/	/fihim-na-X/
	no obj.	fíhim	fíh·m-at	f·hím-t	f·hím-na
OBJECT	1SG	fihím-ni	fih·m-át-ni	f·hím-t-ni	f·hím-na-ni
	2SG.M	fíh·m-ak	fíh·m-at-ak	f·hím-t-ak	f·hím-na-ak
	2SG.F	fíh·m-ik	fíh·m-at-ik	f·hím-t-ik	f·hím-na-ik
	3SG.M	fíh·m-u	fíh·m-at-u	f·hím-t-u	f·hím-na-u
	3SG.F	fihím-ha	fih·m-át-ha	f·hím-t-ha	f·hím-na-ha
	1PL	fihím-na	fih·m-át-na	f·hím-t-na	f·hím-na-na
	2PL	fihím-kum	fih·m-át-kum	f·hím-t-kum	f·hím-na-kum
	3PL	fihím-hum	fih·m-át-hum	f·hím-t-hum	f·hím-na-hum
		'he understood X'	'she understood X'	'you (m.sg.) understood X'	'we understood X'

- Syncope applies as expected in all the white cells, which includes all the forms without an object clitic and most of the forms with object clitics.
  - In the 3SG.F subject forms, the /-at/ subject agreement suffix consistently means that both underlying /i/'s would be in open syllables. Normal application correctly deletes the second one.
  - In the 2SG.M and 1PL subject forms, the C-initial subject agreement suffixes (/-t/ and /-na/) mean that the second underlying /i/ is consistently in a closed syllable. Normal application correctly deletes the first /i/.

- In the 3SG.M subject forms, the subject agreement suffix is null. This means the syllabic context for the second /i/ will *vary depending on the phonological shape of the object clitic*.
  - What we expect is variation between the two syncope positions, comparable to the distinction between the two other paradigm types:

(28) a. Second-syllable syncope with V-initial object clitics (= 3SG.F paradigm) *vs.*
b. First-syllable syncope with C-initial object clitics (= 2SG.M and 1PL paradigms)

→ We do get a distinction, but not exactly what we expected.
  - V-initial object clitics induce second-syllable syncope as expected (29a).
  - But C-initial object clitics show no syncope at all (29b).

(29) **Syncope in object forms of** /fihim-Ø/ → [fíhim] 'he understood'

a. V-initial object clitics (= stem final syllable is open)			
/fihim-Ø-ak/	fíh·m-ak		'he understood you (masc. sg.)'
/fihim-Ø-ik/	fíh·m-ik		'he understood you (fem. sg.)'
/fihim-Ø-u/	fíh·m-u		'he understood him'
b. C-initial object clitics (= stem final syllable is closed)			
/fihim-Ø-ni/	fihím-ni	(not *f·hím-ni)	'he understood me'
/fihim-Ø-ha/	fihím-ha	(not *f·hím-ha)	'he understood her'
/fihim-Ø-na/	fihím-na	(not *f·hím-na)	'he understood us'

- A particularly striking difference between 1PL subjects and 1PL objects:

(30) **1PL subject vs. object**

Syncope applies as expected:	1PL subject (/-na/)	+ no object	→	[f·hím-na]
Syncope does not apply:	3SG.M subject (/-Ø/)	+ 1PL object (/-na/)	→	[fihím-na], *[f·hím-na]

- These distinctions make it clear that the phonological differences cannot be derived solely through reference to the phonological material which is present in the output string, because the phonological material contributed by suffixes/clitics is identical:

(31) a. 1PL subject /-na/ + no object = [-na]
b. 3SG.M subject (/-Ø/) + 1PL object /-na/ = [-na]

- The difference can, though, be attributed to differences in the morphological structure of the two forms.

3.2.2 What's going on? Difference in bases.

- All finite verb forms in Arabic have a subject marker (fíhim-**Ø**, fíhm-**u**, fíhm-**at**, etc.).
  - /fihim/ is the STEM, but subject marking is needed to make it a WORD.
  - The presence of an output [fíhim] identical to the underlying stem (modulo stress) is accidental, due to the arbitrary existence of a phonologically null subject agreement marker. As far as the morphology is concerned, there *is* a subject marker there.

- On the other hand, object marking does not occur if there is a full DP object: it's possible to have verb forms with no object marking, depending on the syntax/morphology.
  - In other words, for every object clitic form, there is a well-formed output word with a proper subset of morphosyntactic features that lacks the object clitic.

→ **What we're observing:** Under the right phonological circumstances, object clitic forms *preserve phonological properties* (outside of their expected context) of their object-less counterpart.

- ○ There are no circumstances in which a form with an overt subject marker preserves phonological properties of a subject form with a phonologically null subject marker.

• In this case at least, we can distinguish between what can count as a base and what can't according to:

(32) **The "Free Base Generalization":** Only well-formed (i.e. actual or possible) output words may serve as bases for the purpose of Base-Derivative correspondence. [Name due to Steriade (2013:12), building on Brame (1974), Kenstowicz (1995, 1996, 1998), Benua (1997), Borowsky & Harvey (1997), Kager (1999), *a.o.*]

- ○ "Cyclic misapplication" usually only occurs in categories that are derived from free standing words.
- ○ In most cases / the ideal case (but not all cases; see work by Stanton & Steriade), the free standing word (base) comprises a morphological sub-constituent of the complex word (derivative).

→ These conditions recapitulate (or, if you're feeling un-charitable, stipulate) properties that largely follow from the architecture of Stratal OT. (Stratal OT still has the reverse problem: bare stems normally don't function as cyclic domains.)

• In this case, the Free Base Generalization properly describes the contexts in which we get cyclic effects:

(33) **Cyclic effects in object paradigms:**

a. VERB-SUBJ$_i$ is a sub-constituent of VERB-SUBJ$_i$-OBJ$_j$.
b. VERB-SUBJ$_i$ is a freestanding word.
↪ VERB-SUBJ$_i$ can function as a base for VERB-SUBJ$_i$-OBJ$_j$.
c. VERB-SUBJ$_i$-OBJ$_j$ is faithful to VERB-SUBJ$_i$.

(34) **No cyclic effects in subject paradigms:**

a. VERB is a sub-constituent of VERB-SUBJ$_i$.
b. Morphologically-speaking, VERB is *not* a freestanding word. (Verbs with a phonologically null subject exponent still have a morphologically-specified subject agreement marker.)
↪ Since VERB is not a well-formed output word, it cannot serve as a base for VERB-SUBJ$_i$, even though it is a morphological sub-constituent.
c. We do not observe VERB-SUBJ$_i$ being faithful to a hypothetical output of VERB, i.e. no paradigm uniformity among different subject inflected forms (fíhim- ∼ fhím- ∼ fíhm-).

3.3 A Base-Derivative Faithfulness account

• The cases where syncope underapplies are the cases where the normal target for syncope bears stress in its base.

(35) **MAX$\acute{V}$-BD:** Assign a violation * for each stressed vowel in the base with no correspondent in the derivative.

- ∗ Notice that this does not require the vowel to still be stressed in the derivative, only to be present. This is therefore another "two-level" faithfulness constraint, which is one way to derive opacity in Parallel OT.

⋆ If we use the Free Base Generalization to determine what may function as a possible base, we can use the Base-Derivative faithfulness constraint to account for the underapplication of syncope.

- The object forms have a free base, so they are subject to the BD faithfulness constraint. This blocks syncope when it would target the vowel that corresponds to the base's stressed vowel:

(36) **Cyclic underapplication in 3SG.M subject + 1PL object**

INPUT: /fihim-Ø$_{3sg.m.subj}$-na$_{1pl.obj}$/ BASE: [fíhim] (← /fihim-Ø$_{3sg.m.subj}$/)	MAXV́-BD	*i]$_\sigma$	MAXV-IO
a. ☞ fihímna		*	
b. fhímna	*!		*

- The subject forms don't have a free base (even though there's a null subject form that looks it could be), so the BD faithfulness constraint is irrelevant in the derivation. Syncope thus has to apply normally.

(37) **No cyclic effect in 1PL subject + no object**

INPUT: /fihim-na$_{1pl.subj}$/ ~~BASE: [fíhim]~~ (← /fihim-Ø$_{3sg.m.subj}$/)	MAXV́-BD	*i]$_\sigma$	MAXV-IO
a. fihímna	not applicable	*!	
b. ☞ fhímna			*

- MAXV́-BD will only have noticeable effects in the highlighted cells from (27), because in all other cases, it advocates for the candidate which would be selected via normal application anyway.
  - i.e., the target of syncope in the other object clitic forms is *not* the stressed vowel in the respective base.

3.4 A Stratal OT account

- Subject agreement affixes are attached on the STEM LEVEL, object clitics are attached on the WORD LEVEL.
  - Everything which is a "free base" will be properly contained within its derivative, so we can use MAXV́-**IO** rather than MAXV́-**BD**.
- Cyclic effects only occur in Word Level affixation, so we need a ranking reversal between levels:

(38) a. STEM LEVEL: *i]$_\sigma$ ≫ MAXV́-IO
b. WORD LEVEL: MAXV́-IO ≫ *i]$_\sigma$

∗ Given Richness of the Base, we need the STEM LEVEL ranking *i]$_\sigma$ ≫ MAXV́-IO to ensure that potential underlying stresses don't disrupt syncope.

(39) **Cyclic underapplication in 3SG.M subject + 1PL object**

STEM LEVEL: root + subject affix evaluation

/fihim$_{Root}$-Ø$_{3sg.m.subj}$/	NONFIN	*i]$_\sigma$	MAXV́-IO	MAXV-IO
a. ☞ fíhim		*		
b. fhím	*!			*

↪ WORD LEVEL: object clitic evaluation

/fíhim$_{Root+3sg.m.subj}$-na$_{1pl.obj}$/	WSP(≥2μ)	MAXV́-IO	*i]$_\sigma$	MAXV-IO
a. ☞ fihímna			*	
b. fhímna		*!		*
c. fíhimna	*!		*	

(40) **No cyclic effect in 1PL subject + no object** (because it's stem level)
STEM LEVEL: root + subject affix evaluation

/fihim$_{\text{Root}}$-na$_{\text{1pl.subj}}$/	WSP($\geq 2\mu$)	*i]$_\sigma$	MAXV́-IO	MAXV-IO
a. fihímna		*!		
b. ☞ fhímna			*	*
c. fíhimna	*!	*!		

↪ WORD LEVEL: object clitic evaluation ...

4 Level ordering

- Kiparsky (2000) levels several critiques of BD correspondence (w.r.t Arabic) having to do with **level ordering**:

1. BD correspondence misses generalizations about the relationships between different types of processes; namely, how epenthesis interacts with word-level processes.
   → This one is fair.
2. BD correspondence doesn't capture the generalization that languages' affixes often divide up into two groups: cyclic affixes (Word level) vs. non-cyclic affixes (Stem level).
   → The picture really isn't that clean. We probably need more than two groups.
   → Furthermore, faithfulness to bases may be substantially more complex.

4.1 Epenthesis in Levantine Arabic

- Kiparsky (2000:3) shows that, in Levantine and many other Arabic dialects, epenthesis that (optionally?) fixes word-final CC# clusters is systematically **opaque** with respect to *all* "word-level" processes.

(41) **Invisible for the purposes of stress assignment**
a. Non-epenthetic final: /katab-at/ [kátabat] 'she wrote' (transparent antepenult stress)
b. Epenthetic final: /katab-t/ [katábit] (*[kátabit]) 'I wrote' (opaque penult stress; "counter-shifting")
↪ *stress should retract here*

(42) **Invisible for the purposes of shortening**
a. Non-epenthetic final: /ʃaːf-at/ [ʃáːfat] 'she saw' (transparent retention of length)
b. Epenthetic final: /ʃaːf-t/ [ʃífit] (*[ʃáːfit]) 'I saw' (opaque shortening; "counter-bleeding")
↪ *shortening should not apply here*

(43) **Invisible for the purposes of emphasis spread** (Iraqi Arabic)
a. Non-epenthetic final: /rubaṭ-at/ [rubaṭat] 'she fastened' (spread blocked by *a*)
b. Epenthetic final: /rubaṭ-t/ [rubaṭiṭ] (*[rubaṭit]) 'I fastened' (opaque spread across *i*; "counter-bleeding")
↪ *emphasis should not spread here*

- Stratal OT can capture this generalization through **level ordering**:

(44) a. Each of these processes applies in the stem-level and/or word-level strata.
b. Epenthesis (at least of the sort that fixes CC# clusters) happens only at the post-lexical stratum.
↪ The epenthetic vowel is *absent* in the earlier strata.
c. Therefore, all of these processes should apply to the pre-epenthesis representation.

- Without the epenthetic vowel, the environments for each of these processes are met, and they apply transparently at the stem/word level. Epenthesis applies later in a way that opacifies the original environment.
  - The processes are then either switched off at the post-lexical level (stress) or are neutralizing so it doesn't matter (shortening, emphasis spread).

- For example, a change in ranking between DEPV-IO and *CC# opacifies shortening:

(45) **Post-lexical epenthesis opacifies shortening**

STEM LEVEL: shortening applies transparently

/ʃa:f-t/	*V:CC	**DEPV-IO**	IDENT[long]-IO	*CC#
a. ʃá:ft	*!			**
b. ☞ ʃáft			*	*
c. ʃá:fit		*!		

↪ WORD LEVEL ...

↪ POST-LEXICAL LEVEL: epenthesis at the phrasal level (also raising?)

/ʃáf-t/	*V:CC	IDENT[long]-IO	*CC#	**DEPV-IO**
a. ʃáft			*!	
b. ☞ ʃífit				*
c. ʃá:fit		*!		*

∗ The $a \rightarrow i$ reduction presumably has to follow/coincide with epenthesis, since it only occurs in open syllables. This suggests there should be general post-lexical raising. I don't know what the data is.

- At best, a BD-correspondence analysis will have to posit separate BD-faithfulness constraints to explain each of these effects, missing that there seems to be some unifying generalization that this kind of epenthesis is invisible in a real sense.

- Furthermore, it is not clear how to account for these facts to begin with.
  - Kiparsky talks about Sympathy Theory (McCarthy 1999, 2003): faithfulness to the losing form that does best w.r.t. a specified low-ranked faithfulness constraint. (Nobody believes in this anymore.)
  - We might do this with "faithfulness among variants" (Kawahara 2002): the epenthetic forms are being faithful to the non-epenthetic forms (which would be real variants if epenthesis is optional).

→ This is the type of opaque interaction that Parallel OT has trouble dealing with in general. Stratal OT is built to deal with this kind of opacity.

⋆ **Take-away:** BD correspondence may sometimes miss big picture generalizations about process interaction in particular languages that Stratal OT does capture.

4.2 The 'two types of affixes' generalization

- The Arabic examples look like they break down nicely into two sets:
  - Affixes that don't exhibit cyclic effects → "stem level"; e.g., subject agreement suffixes, the Tripoli singulative
  - Affixes that do exhibit cyclic effects → "word level"; e.g., object clitics, possessors
- In the tradition of LPM, Kiparsky (2000) at least implies that this is a cross-linguistically true state of affairs.
  - Stratal OT then correctly and restrictively captures this generalization by stipulating there are exactly two levels (before the post-lexical level).
- But when you dig deeper, it looks like this isn't really true: sometimes, you need more than two.

4.2.1 English level ordering: morphological correlations

- For the most part, English looks like it has two distinct, consistent types of affixes:

(46) a. **Level 1** (stem level)
-al, *-(i)an*, *-ate*, *-ic*, *-(t)ion*, *-ity*, *-ive*, *-ous*, *-y* (N), etc.

b. **Level 2** (word level)
-er (agentive), *-ful*, *-hood*, *-ism*, *-ist*, *-less*, *-like*, *-ly*, *-ness*, *-y* (Adj), etc.

- This correlates with the following (non-phonological) characteristics:

1. *Bases of affixation*:
   - Level 1 can attach to free-standing words and **bound roots**: *prolif-ic*, *frag-ment*, *ed-ible*
   - Level 2 attach only to free-standing words (no words like **frag-ful*)

2. *Ordering*: Level 1 tend to be inside Level 2:

(47) **Affix ordering**
   a. ✓ 1>1: *curi-os$_1$-ity$_1$*
   b. ✓ 1>2: *myst-ic$_1$-ism$_2$*
   c. ✗ 2>1: **affix-less$_2$-ity$_1$*
   d. ✓ 2>2: *affix-less$_2$-ness$_2$*

3. *Productivity*:
   - Level 1 affixes are generally lexically restricted; Level 2 are fairly/fully productive.
   - Even clearer: inflectional suffixes (*-s*, *-ed*, *-ing*) are completely productive and leave virtually all stem properties intact (i.e. clearly Level 2).

4. *Semantic transparency*:
   - Level 1 affixes may yield semantically opaque derivatives.
   - Level 2 are relatively transparent.

→ These criteria alone may not fully *motivate* classification into stem- vs. word-level, but at least they correlate with the distinction.

4.2.2 English level ordering: phonological correlations

- The claim goes that there are a number of phonological properties shared by Level 1 affixes that are not shared by Level 2 affixes:

1. *Stress attraction*:
   - Level 1 affixes shift stress to the right: *phóneme* → *phonémic* (**phónemic*); *sýllable* → *syllábic* (**sýllabic*)
     - ◇ This results in a stress pattern that is parallel to equivalent monomorphemic words.

   → **No stress shift with Level 2 affixation:** *fr*[ɛ́]*ndli-ness*, not **fr*[ə]*ndlí-ness*

2. *Trisyllabic shortening* (e.g. *der*[ɪ]*vative*, not **der*[aɪ]*vative*):
   - Underlyingly long/tense diphthongs shorten to their "vowel shift correspondents" under Level 1 affixation:

(48) **Trisyllabic shortening with Level 1**

[aɪ]	div[aɪ]ne	∼	[ɪ]	div[ɪ]nity
[iː]	ser[iː]ne	∼	[ɛ]	ser[ɛ]nity
[eɪ]	prof[eɪ]ne	∼	[æ]	prof[æ]nity
[oʊ]	verb[oʊ]se	∼	[a]	verb[a]sity
[aʊ]	prof[aʊ]nd	∼	[ʌ]	prof[ʌ]ndity

   - Similar dispreference seen in monomorphemic words (though exceptions, like *D*[oʊ]*berman*)

   → **No shortening under Level 2 affixation:** *hope* ∼ **h*[oʊ]*pe-ful-ly*, not **h*[a]*pe-ful-ly*

3. *Other morphologically restricted alternations for Level 1 only*:
   - Velar softening, assibilation and palatalization

(49) **Morphologically restricted alternations**

opa[k]*ue*	→	*opa*[s]*ity*
permi[t]	→	*permi*[ʃ]*ion*
permi[t]	→	*permi*[s]*ive*
pira[t]*e*	→	*pira*[s]*y*
analo[g]*(ue)*	→	*analo*[ʤ]*y*
allu[d]*e*	→	*allú*[ʒ]*ion*
elu[d]*e*	→	*elu*[s]*ive*

→ **Don't occur with Level 2:** e.g. *dog* ↛ **do*[ʤ]*y* (dimin.); *nu*[d]*e* ↛ **nu*[s]*ist*; *rabbi*[t] ↛ **rabbi*[s]-*y* (Adj)

- Same thing for other, more or less lexically idiosyncratic adjustments — only with Level 1:
  - ◇ *assume* ∼ *assumption*; *conjoin* ∼ *conjunction*; *maintain* ∼ *maintenance*; *giant* ∼ *gigantic*

4.2.3 English level ordering in Stratal OT

- Stratal analysis provides an economical characterization of this difference (if it's true):

(50) a. **Stem-level grammar:** regular English stress pattern, palatalize, trisyllabic shortening ≫ $\mathcal{F}_{\text{IO}}$
b. **Word-level grammar:** $\mathcal{F}_{\text{IO}}$ ≫ regular English stress pattern, palatalize, trisyllabic shortening

→ Promotion of faithfulness between strata lets correspondence capture the observation that word-level affixation preserves properties of related forms.

4.2.4 What about *–ize*?

- Problem is, not all affixes fit neatly into one group or the other. For example, *-ize* has some properties of "Level 1" affixes (51a) but some properties of "Level 2" affixes (51b):

(51) **Properties of *–ize***
a. **"Level 1" properties:** occurs with bound roots, occurs inside Level 1 affixes, preserves final clusters, shows some irregular alternations
b. **"Level 2" properties:** no stress attraction, no trisyllabic shortening

⋆ Level 1 properties:

1. *Occurs with bound roots*:

(52) ***-ize* with bound roots**

bapt-ize	cf. *bapt-ism*
antagon-ize	cf. *antagon-ist-ic*
legitim-ize	cf. *legitim-ate*
emphas-ize	cf. *emphat-ic*
anonym-ize	cf. *anonym-ous*
sensit-ize	cf. *sensit-ive*
mechan-ize	cf. *mechan-ic*, *mechan-ism*
evangel-ize	cf. *evangel-ic-al*
catech-ize	cf. *catech-ism*

2. *Occurs inside other Level 1 affixes*:
   - *-iz-ation*, (*-iz-ance*)
3. *Preserves final clusters* (cf. *iambic*, *hymnal*, *autumnal*)
   - *solemnize* (OED: [sáləmnaɪz])
   - *autumnize* (OED: [ɔ́ːtəmnaɪz])
   - *columnize* (predicted [káləmnaɪz], maybe variation)
4. *Triggers some irregular alternations*:
   - Velar softening: *angli*[s]*ize* (cf. *Angli*[k]*an*), *publi*[s]*ize* (cf. *publi*[k])
   - *dr*[a]*ma* → *dr*[æ]*matize* (∼ *dr*[a]*matize*)
   - Occasional assibilation: Google hits for *democracize*, *legitimacize*

⋆ Level 2 properties:

1. *Does not trigger trisyllabic shortening*:
   - *v*[aɪ]*tal* → *(re-)v*[aɪ]*talize* (**v*[ɪ]*talize*); *imm*[oʊ]*bile* → *imm*[oʊ]*bilize* (**imm*[a]*bilize*)
2. *Stress remains intact* (no rightward shift):
   - *mílitarize*, *álphabetize*, *pálatalize*, *cháracterize*, *cátegorize* (**càtegórize*)

- It's not just *-ize*. Similar discrepancies with *-ee*, *-able*, and maybe others.

4.2.5 Take-away

- The Lexical Phonology/Stratal OT approach of having two distinct, well-defined levels can't explain the split behavior of affixes like *-ize*. The traditional approach of saying that *it can be either level* doesn't really work either, because its properties are consistently split.

→ Something more complex must be going: individually indexed Base-Derivative faithfulness constraints/rankings could do the job (cf. Stanton & Steriade 2014 et seq.):

(53) **Rankings for different affix types**

	Stress	**Velars**
"Standard Level I"	STRESS ≫ Base-Deriv $\mathcal{F}$	VELAR SOFTENING ≫ Base-Deriv $\mathcal{F}$
-ize	Base-Deriv $\mathcal{F}$ ≫ STRESS	VELAR SOFTENING ≫ Base-Deriv $\mathcal{F}$
"Standard Level II"	Base-Deriv $\mathcal{F}$ ≫ STRESS	Base-Deriv $\mathcal{F}$ ≫ VELAR SOFTENING

- A Stratal model would have to have a unique level for each type.

→ This begins to look more like Cophonology Theory than the restrictive Stratal OT model Kiparsky wants.

5 Local vs. Remote bases

- We've assumed that for any complex form, there's only one possible base to be faithful to: the immediate subconstituent.
- There's evidence that we need more freedom in selecting bases:
  → Sometimes it's something other than the immediate subconstituent which must act as the base.

⋆ This will be easy to formalize in the Parallel OT w/ BD correspondence model, but not in the Stratal OT model.

5.1 Types of accentual faithfulness in Australian languages

- Stanton (2014, 2015) shows that Australian languages with quantity insensitive left-to-right alternating stress (QI L→R) show cyclic stress effects of one of two types:
  1. Faithfulness to the immediate morphological subconstituent — the *local base* (B_L).
  2. Faithfulness to the root in isolation — the *remote base* (B_R).[1]
- Stanton (following Steriade 1999, Stanton & Steriade 2014, Steriade & Yanovich 2015, *a.o.*) analyzes this by positing that base selection is controlled by violable constraints:

(54) **Base preference constraints** (Stanton 2015:55)
   a. CORRB_L: Assign a violation * if a derivative does not correspond with its **local** base.
   b. CORRB_R: Assign a violation * if a derivative does not correspond with its **remote** base.[2]

- For multiply suffixed words, their relative ranking determines which potential base the derivative actually stands in correspondence with. (Higher ranked constraints can potentially override this preference; see below.)

[1] Stanton & Steriade (2014) take remote bases to be any lexically related form with higher frequency.
[2] Stanton (2015) defines it here as "a * if the stem of a complex form doesn't correspond with the stem in isolation".

(55) **Base selection**

a. **Correspondence with local base:** $\text{CORRB}_\text{L} \gg \text{CORRB}_\text{R}$

INPUT: /ROOT-AFX$_1$-AFX$_2$/ BASE$_\text{L}$: [ROOT-AFX$_1$] BASE$_\text{R}$: [ROOT]		CORRB$_\text{L}$	CORRB$_\text{R}$
a. ☞	[ROOT-AFX$_1$]$_\text{L}$-AFX$_2$		*
b.	[ROOT]$_\text{R}$-AFX$_1$-AFX$_2$	*!	

b. **Correspondence with remote base:** $\text{CORRB}_\text{R} \gg \text{CORRB}_\text{L}$

INPUT: /ROOT-AFX$_1$-AFX$_2$/ BASE$_\text{L}$: [ROOT-AFX$_1$] BASE$_\text{R}$: [ROOT]		CORRB$_\text{R}$	CORRB$_\text{L}$
a.	[ROOT-AFX$_1$]$_\text{L}$-AFX$_2$	*!	
b. ☞	[ROOT]$_\text{R}$-AFX$_1$-AFX$_2$		*

- The difference in correspondence does not have any surface ramifications in and of itself. However, when BD-faithfulness constraints outrank markedness constraints, the choice of which base to select will have different results.

5.1.1 QI L→R with foot-free constraints

- Stanton (2014) finds 23 Australian languages with QI L→R + no final stress.

(56) **Stress in monomorphemic forms in Warlpiri**

a.	*σ́σ*	wáti	'man'	(Nash 1980:102)
b.	*σ́σσ*	wátiya	'tree'	(Nash 1980:102)
c.	*σ́σσ̀σ*	mánangkàrra	'spinifex plain'	(Nash 1980:102)
d.	*σ́σσ̀σσ*	wíjipìtirli	'hospital'	(Berry 1998:37)

- We'll need 5 stress constraints (+ *LAPSE, which is included for completeness, but it does no work):

(57)
a. **STRESSL:** Assign a violation * if the initial syllable is unstressed.
b. **NONFINALITY:** Assign one violation * if the final syllable is stressed.
c. ***CLASH:** Assign one violation * for each sequence of two adjacent stressed syllables.
d. **LAPSE@END:** Assign one violation * for each sequence of two unstressed syllables not at the right edge.
e. ***EXTENDEDLAPSE:** Assign one violation * for each sequence of three unstressed syllables.
f. ***LAPSE:** Assign one violation * for each sequence of two unstressed syllables.

(58) **Stress in 5 syllable monomorphemic words**

/σσσσσ/		STRESSL	NONFIN	*CLASH	LAPSE@END	*EXTLAPSE	*LAPSE
a. ☞	*σσσ́σσ*						*
b.	*σσ́σσ́σ*	*!					
c.	*σ́σσ́σσ́*		*!				
d.	*σ́σσ́σσ*			*!			
e.	*σ́σσσ́σ*				*!		*
f.	*σ́σσσσ*				*!*	**	***

- While all QI L→R languages have the same stress pattern in monomorphemic words, they diverge in complex words.

→ The divergence can be explained in terms of which base the language selects.

5.1.2 Local base languages: Diyari

- In Diyari, in all complex forms:
  - Monosyllabic suffixes are stressless (59a–c), but
  - Polysyllabic suffixes are stressed like stems (59b–c)

(59) **Diyari stress** (Stanton 2015:56; see Austin 1981, Poser 1989, Berry 1998, Alderete 2009)

a.	*ǿσ-σ-σ*	máda-la-nthu	'hill-CHARAC-PROP'
b.	*ǿσσ-σ-ὸσ*	púluru-ni-màta	'mud-LOC-IDENT'
c.	*ǿσσ-ὸσ-ὸσ-σ*	yákalka-yìrpa-màli-rna	'ask-BEN-RECIP-PART'

→ **The way to explain this:** Diyari is always faithful to the local base.

- In forms where there is a single 1σ suffix, the CORR constraints are not at stake, because the local base and remote base are one in the same. But these forms show that:
  1. A single 1σ suffix can't bear stress due to NONFINALITY
  2. You can't fix lapses (extended or non-final) by placing a stress on an unstressed syllable of the base, due to IDENT[stress]-BD

(60) **2σ root + 1σ suffix**

INPUT: /σσ-σ/ BASE$_L$: [ǿσ] BASE$_R$: [ǿσ]		CORRB$_L$	CORRB$_R$	NONFIN	IDENT[stress]-BD	*LAPSE
a.	☞ [ǿσ]$_{L/R}$-σ					*
b.		[ǿǿ]$_{L/R}$-σ				*!	
c.		[ǿσ]$_{L/R}$-ǿ			*!		

(61) **3σ root + 1σ suffix**

INPUT: /σσσ-σ/ BASE$_L$: [ǿσσ] BASE$_R$: [ǿσσ]		C-B$_L$	C-B$_R$	NONFIN	ID[str]-BD	LAPSE@END	*EXTLAPSE
a.	☞ [ǿσσ]$_{L/R}$-σ					*	*
b.		[ǿσǿ]$_{L/R}$-σ			*!		
c.		[ǿσσ]$_{L/R}$-ǿ		*!		*	

- Once we get to a form with two 1σ suffixes, though, the CORR constraints become crucial.
  - If you had the option of corresponding with the remote base, you could get a perfect stress pattern w/o violating IDENT[stress]-BD, because you could stress the first 1σ suffix.
  - The fact that you can't do this means (under this approach) that CORRB$_L$ ≫ CORRB$_R$, i.e. you have no choice but to correspond with the local base.

(62) **2σ root + 1σ suffix + 1σ suffix**

INPUT: /σσ-σ-σ/ BASE$_L$: [ǿσ-σ] BASE$_R$: [ǿσ]		CORRB$_L$	CORRB$_R$	LAPSE@END	*EXTLAPSE
a.	☞ [ǿσ-σ]$_L$-σ		*	*	*
b.		[ǿσ]$_R$-ǿ-σ	*!		

- This sort of case doesn't disambiguate between approaches, because Stratal OT will always show "correspondence with the local base".

5.1.3 Remote base languages: Dyirbal

- On the other hand, stress in Dyirbal complex forms requires something different: stems of complex forms are faithful to the stress of their isolation forms, subject to the influence of some M constraints.

(63) **Dyirbal complex forms** (Stanton 2015:56; Dixon 1972, Berry 1998)

a.	*σσσ̀-σ*	búrgurùm-bu	'jumping ant-ERG'	(cf. búrgu**rum**)
b.	*σσσ-σ̀-σσ*	mándalay-mbàl-mbila	'play-COM-LEST'	
c.	*σσσ-σ̀-σ-σ*	bánagay-mbà-rri-ɲu	'return-COM-REFL-P/P'	

- Dyirbal differs from Diyari in two ways:

- First (and not what we care about): *EXTENDEDLAPSE ≫ IDENT[stress]-BD

(64) **3σ root + 1σ suffix**

INPUT: /σσσ-σ/ BASE$_L$: [σ́σσ] BASE$_R$: [σ́σσ]	C-B$_R$	C-B$_L$	NONFIN	*EXTLAPSE	ID[str]-BD	LAPSE@END
a. [σ́σσ]$_{L/R}$-σ				*!		*
b. ☞ [σ́σσ́]$_{L/R}$-σ					*	
c. [σ́σσ]$_{L/R}$-σ́			*!			*

- Second (what we care about): CORRB$_R$ ≫ CORRB$_L$

(65) **3σ root + 1σ suffix + 2σ suffix**

INPUT: /σσσ-σ-σσ/ BASE$_L$: [σ́σσ-σ] BASE$_R$: [σ́σσ]	CORRB$_R$	CORRB$_L$	ID[str]-BD	LAPSE@END	*LAPSE
a. ☞ [σ́σσ]$_R$-σ́-σσ		*		*	**
b. [σ́σσ́]$_R$-σ-σ́σ		*	*!		
c. [σ́σσ́-σ]$_L$-σ́σ	*!				

- You could have gotten a perfect stress pattern with perfect BD-identity if only you were allowed to correspond with the local base (candidate c).
- But BD-faithfulness still plays a role, ruling out the perfect stress pattern with imperfect BD-identity (candidate b).

→ Therefore, we need correspondence to the remote base to be possible, and (in order to get the difference with Diyari) to be grammatically controlled, i.e. something like these distinct CORR constraints.

5.2 Markedness-conditioned base selection in English

- So far, the CORR constraints have not really interacted with the other constraints, so we could imagine the choice between local vs. remote base being determined through some other sort of mechanism.
- However, once we look at English, we see that we actually do get interactions ("split-base effects") that require base selection to be done via violable constraints.

- If correspondence is established via constraint, we predict the following type of ranking to be possible:

(66) $\mathbb{F}_{BD} \gg \mathbb{M}_1 \gg \textsc{CorrB}_X \gg \textsc{CorrB}_Y \gg \mathbb{M}_2$

- What does this ranking generate?
  - In the general case (i.e. if faithfulness to B_X and B_Y fares the same w.r.t. $\mathbb{M}_1$), you correspond with and be faithful to B_X, even if it means violating $\mathbb{M}_2$.
  - Just in case faithfulness to B_Y satisfies $\mathbb{M}_1$ but faithfulness to B_X does not, you correspond with B_Y.
  - *Corollary*: B_Y must exist in order to satisfy $\mathbb{M}_1$ if faithfulness to B_X would violate $\mathbb{M}_1$.

⇒ **Summary:** You can pick the "wrong" base if it does better on markedness.

↪ Stress in complex words in English sometimes works like this (Stanton & Steriade 2014, Stanton 2015).

- In long simplex words, English normally stresses the first syllable not the second, e.g. *Mèditerránean* not **Medìterránean*: hence, StressL ≫ *Lapse.

(67) **Initial stress by default in *Mediterranean***

INPUT: /*Mediterranean*/ $BASE_L$: none $BASE_R$: none	$\textsc{CorrB}_L$	$\textsc{CorrB}_R$	StressL	*Lapse
a. ☞ *Mèditerránean* (200100)				**
b. *Medìterránean* (020100)			*!	*

- When a complex word has the right type of base with the right type of stress pattern, this preference can be reversed.
  - Specifically, if a local base has [#01...], e.g. *orìginálity* ≻ **òriginálity* because of *oríginal*

(68) **Stress in *origin* and its derivatives**

i.	*órigin*	[ɔ́rədʒɪn]	(100)	
ii.	*oríginal*	[ərídʒən-əl]	(010-0)	
iii.	*orìginálity*	[ərìdʒən-ǽl-ɪri]	(020-1-00)	cf. *Mèditerránean* (200100)

- This shows us that $\textsc{CorrB}_L \gg \textsc{CorrB}_R$, because **òriginálity* could have been faithful to **òrigin*.

(69) **Non-initial stress in *originality* due to $\textsc{CorrB}_L$**

INPUT: /*origin-al-ity*/ $BASE_L$: [ərídʒən-əl] (010-0) $BASE_R$: [ɔ́rədʒɪn] (100)	$\textsc{CorrB}_L$	$\textsc{CorrB}_R$	StressL	*Lapse
a. *òriginálity* $[ɔ̀rədʒɪn]_R$-ǽl-ɪri ([200]-1-00)	*!			**
b. ☞ *orìginálity* $[ərìdʒən\text{-}ǽl]_L$-ɪri ([020-1]-00)		*	*	*

⋆ The preference for correspondence to the local base over the remote base can be overridden by markedness pressures.
  - Namely, if correspondence + faithfulness to the local base would cause a clash but correspondence + faithfulness to the remote base wouldn't, you correspond with the remote base.
  - e.g. *apòstolícity* (**àpostòlícity*) is faithful to remote base *apóstle* rather than local base *àpostólic* to avoid a clash.

(70) **Stress in *apostle* and its derivatives**

a.	*apóstle*	[əpásl̩]	(010)
b.	*àpostólic*	[æpəstál-ɪk]	(201-0)
c.	*apòstolícity*	[əpàs(t)əl-ís-ɪri]	(020-1-00)

- We can derive this with the ranking *CLASH ≫ CORRB_L:

(71) **Clash-driven correspondence with (and faithfulness to) remote base in *apòstolícity***

INPUT: /*apostle-ic-ity*/ $BASE_L$: [ǽpəstál-ɪk] (201-0) $BASE_R$: [əpásl̩] (010)	*CLASH	C-B_L	C-B_R	STRESSL	*LAPSE
a. ☞ *apòstolícity* [əpàs(t)əl]$_R$-ís-ɪri ([020]-1-00)		*		*	*
b. *àpostòlícity* [ǽpəstàl-ís]$_L$-ɪri ([202-1]-00)	*!		*		*

- But this only works when there is actually a remote base whose stress pattern can help avoid a clash.
  - Stress (position) doesn't alternate in *álcohòl* vs. *àlcohólic*, so no way to avoid the clash when you add *-ity*.

(72) **Stress in *alcohol* and its derivatives**

a.	*álcohòl*	[ǽlkəhàl]	(102)
b.	*àlcohólic*	[ælkəhál-ɪk]	(201-0)
c.	*àlcohòlícity*	[ælkəhàl-ís-ɪri]	(202-1-00)

(73) **Clash can't be avoided in *alcoholicity* due to BD faithfulness**

INPUT: /*alcolhol-ic-ity*/ $BASE_L$: [ælkəhál-ɪk] (201-0) $BASE_R$: [ǽlkəhàl] (102)	ID[stress]-BD	*CLASH	C-B_L	C-B_R	*LAPSE
a. *àlcohòlícity* [ælkəhàl]$_R$-ís-ɪri ([202]-1-00)		*	*!		*
b. ☞ *àlcohòlícity* [ælkəhàl-ís]$_L$-ɪri ([202-1]-00)		*		*	*
c. *àlcoholícity* [ælkəhəl-ís]$_L$-ɪri ([200-1]-00)	*!			*	**

∗ Something further needs to be said about what's going on with the alternation on *-ic-* suffix (Stanton & Steriade 2014).

5.3 Summary

- The distinctions among the Australian languages show that we need at least a parametric difference across languages in whether you correspond to the local base or the remote base.
- The differences in stress patterns within English that depend on what types of bases you have available to you shows that this parameterization must also be available within a single language.

→ These can both be achieved if correspondence is established via the grammar by ranked, violable constraints.

⋆ Standard versions of Stratal OT are ill-equipped to deal with these sorts of issues.

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