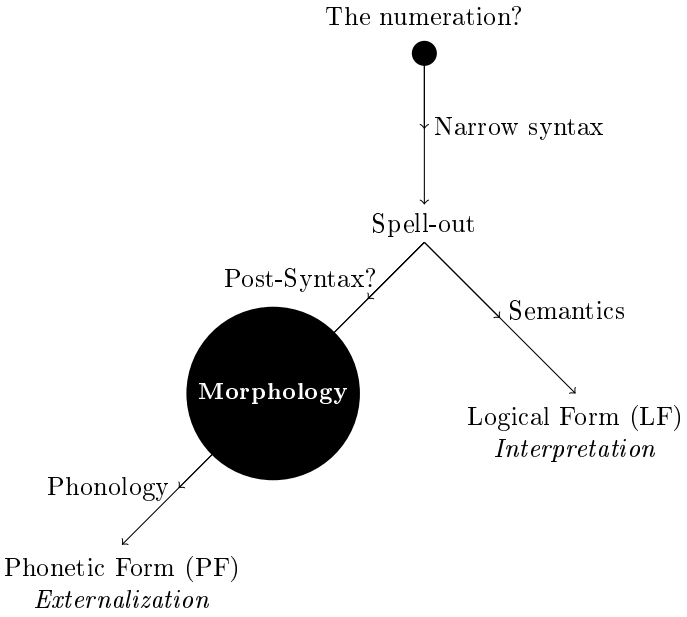
Class 2
Phonologically-Conditioned Suppletive Allomorphy (PCSA)

10/5/23

1 Excursus: The Y-Model

- Since at least Chomsky (1986), the predominant model of the architecture of the grammar has been the "Y-model". I schematize a version of this model in (1):

(1) The Y-Model



(2) Aspects of the Y-model

1. The derivation begins with the syntax assembling hierarchical syntactic structures from roots and syntactic features. (The numeration is the unordered collection of features that the syntactic structure will be built out of.)
   - ↪ At this point, there are only abstract features, no phonological content. (Some people think that roots already have phonological content here.)
   - ↪ There is also (in my view at least) no linear order, just hierarchical/constituent structure. (See Kayne 1994's "Linear Correspondence Algorithm (LCA) for a different view.)

2. At some point in the derivation (phase boundaries?), the syntactic structure which has been constructed is "spelled out", i.e. sent to LF for interpretation and sent to PF for externalization.
   - ↪ In this course, we are interested (primarily) in the PF branch.

3. After Spell-out, there may or may not be operations ("The Post-Syntax") that alter the hierarchical structure, and add or subtract features (see, e.g., Halle & Marantz 1993, Embick & Noyer 2001, Arregi & Nevins 2012, Harizanov & Gribanova 2019). If these exist, they are part of the morphological component.

4. This hierarchical structure, still containing only abstract features, is submitted to the morphological component (such as it is), which converts ("realizes") abstract features to phonological content which is interpretable by the phonological component. DM does this through the process of Vocabulary Insertion.

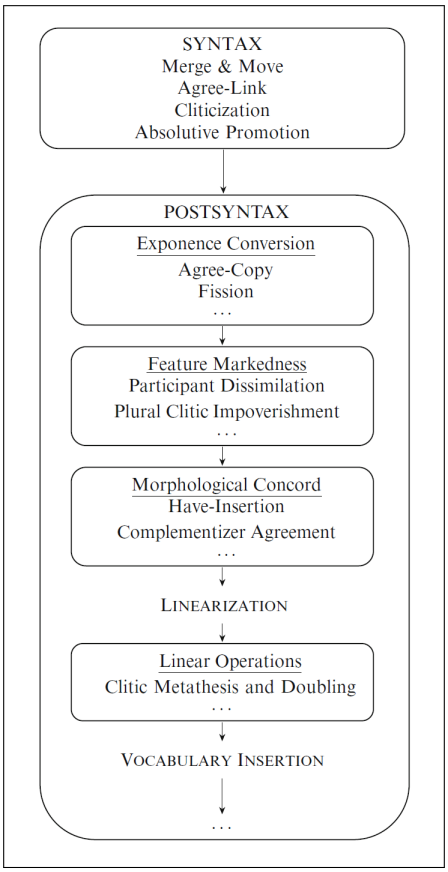
5. Finally, phonology takes the output of the morphological component and creates well-formed phonological(/phonetic) outputs according to the phonological grammar of the language.

- With this context, we can understand the goal of this course to be understanding:

(3) a. At what time-point along the way to PF are different aspects of word-building instantiated?
b. What formal mechanisms do we need to be part of the grammar in order to make that happen?
c. Which formal mechanisms can transparently interact with one another (and when)?

- Arregi & Nevins (2012:4) have a definitive(!) answer to all of these questions, based on their work on Basque auxiliaries:

(4) The world according to Arregi & Nevins (2012)



- It's worth keeping their proposal in mind, but we'll try to answer these questions for ourselves.

2 Reminder: PCSA

⋆ **Big question form last time:** What is the best way (and best place in the grammar) to encode phonological conditioning in allomorph selection?

- Two main approaches:

(5) *Subcategorization*: specify the phonological conditioning in a subcategorization frame, which is stored in the lexicon and (necessarily) satisfied upon insertion.
↪ Phonological information in the morphological component

(6) *Optimization* ("**P** ≫ **M**"): allow the phonology to choose between allomorphs by intermingling phonological constraints with morphological constraints.
↪ Morphological information in the phonological component

- **Plan for today:**
  - Go into more detail about (versions of) the two approaches
  - Explore the predictions of the two approaches
  - See how those predictions are borne out by the available evidence

3 Subcategorization (à la Paster 2009)

- Subcategorization in phonology/morphology goes back to at least the early 1980's (Lieber 1980, Kiparsky 1982, 1983, Selkirk 1982), and was first extensively formalized by Inkelas (1990) (see also Orgun 1996).

- In the 2000's, the approach was updated for the OT era:
  - Mary Paster's work on phonologically-conditioned allomorphy and phonologically-conditioned affix order (chiefly Paster 2006, 2009, 2015); see also Bye (2007)
  - Alan Yu's work on infixation (Yu 2003, 2007)
  - Also more recently in work by Laura Kalin and Nik Rolle (Kalin & Rolle 2022)

- Paster (2009:21ff.) lays out the framework succinctly:

(7) a. "[T]he possibility of attaching an affix to a particular stem depends on whether the stem is compatible with the subcategorizational requirements of the affix."
b. "[A]ffixation occurs within a distinct morphological component of grammar... Only those combinations of roots and affixes allowed by subcat frames are assembled."

↪ The morphology puts morphemes together, inviolably abiding by their subcategorization requirements.

- What can be in a subcat frame? According to Paster:

(8) a. "[S]yntactic, semantic, and, crucially, phonological aspects of the stem."
b. "[T]he location of attachment relative to the stem (e.g., whether the affix is a prefix or suffix)"
c. "[The location of attachment] relative to phonological elements of the stem (as in infix placement)."

↪ In Paster's view, all combinatorial restrictions on morphemes live in the subcat frames, in the morphology/lexicon.
  - Kalin & Rolle (2022) (and probably others, esp. DM-oriented people) think that the subcat frames we're talking about just have phonological and morphological information in them.
  → Syntactic/semantic "subcategorization" is just syntactic selection.

- What kind of phonological information can be in a subcat frame? According to Paster:

(9) a. "[E]lements of the prosodic hierarchy" (prosodic words, feet, syllables, moras)
  * Namely, particular types of prosodic elements: e.g. a stressed syllable, an iambic foot, etc...
 b. Consonant vs. Vowel
 c. A segment "that bears a particular phonological feature"

3.1 Implementing subcategorization

- A classic case of PCSA is the 2nd person singular suffix in Hungarian (10) (data from Paster 2009:25, citing Abondolo 1988, Kenesei, Vago, & Fenyvesi 1997, Rounds 2001).
  - Generally, the suffix is exponed by [-s] (orthographic *-sz*), as in (10a).
  - However, when the stem ends in a sibilant ([-s,-z]), an alternative allomorph [-El] surfaces, as in (10b).
    [*E* is a harmonizing mid vowel]

(10) PCSA in the Hungarian 2nd singular (orthographic representations)

	[-sz]			[-El]	
a.	mond-a-sz	'you say'	b.	vonz-ol	'you attract'
	vág-sz	'you cut'		edz-el	'you train'
	vár-sz	'you wait'		hajhász-ol	'you seek'
	nyom-sz	'you press'		főz-öl	'you cook'
	rak-sz	'you place'			

- The motivation for this distribution is clearly the same as what we saw in English plural allomorphy:
  → avoiding adjacent sibilants
- Subcategorization misses this generalization, and Paster is ok with that.
  - At least Paster's version does; recall Nevins's (2011) approach using constraint violation/satisfaction.

(11) Subcategorization frames for Hungarian 2SG
 a. 2SG ⇔ [-El] / $[_{\text{STEM}}\ldots C_{[+\text{sib}]}]\_$ (or maybe just: / $C_{[+\text{sib}]}\_$)
 b. 2SG ⇔ [-s] (elsewhere)

- How does the grammar turn these subcat frames into a successful derivation?
  → Vocabulary Insertion is still inherently ordered via the Subset Principle / Elsewhere Condition:
  - The VI rule with the more-specific subcat frame is discharged first.

- This means that these subcat frames live in the morphology, as part of the lexicon.
  - Only morphologically/lexically well-formed combinations (in terms of subcategorization) of roots and affixes are transmitted to the phonology.
  ≈ Subcat frames are inviolable.

4 Predictions of subcategorization vs. optimization ("P ≫ M")

- Paster (2009:22) spells out the contrasting predictions for the two models:

(12) Predictions of **P ≫ M** for PCSA
 a. PCSA is 'optimizing' and analyzable using externally motivated P constraints.
 b. PCSA is sensitive to phonological properties of surface forms, not underlying forms.
 c. Phonological conditioning between stems and affixes can go in either direction.
 d. ~~The conditions on allomorph selection can be located anywhere in the word.~~

(13) Predictions of subcategorization approach for PCSA
  a. PCSA is not always phonologically optimizing.
  b. PCSA is sensitive to phonological elements in underlying/input forms, not in surface forms.
  c. Phonological conditions on PCSA can come only from the 'inside'.
  d. ~~Affix allomorphs are adjacent to the phonological elements of stems that condition their distribution.~~

- Below we'll work through the first two predictions about optimization and input vs. output conditioning.
- We'll talk about inside/internal vs. outside/external conditioning in a week or two.
- I disagree with Paster's claimed predictions about locality:

4.1 Predictions about locality

- In P ≫ M, you can only get long-distance conditioning via well-defined long-distance constraints.

→ Consider *l*-dissimilation with the Latin suffix *-ālis/-āris* 'relating to' (Stanton 2016, 2017):

(14) Allomorphy in Latin

a. *l*-forms		b. *r*-forms	
[nāv-ālis]	'of ships, ship–, nautical, naval'	[sōl-āris]	'of the sun, solar'
[hospit-ālis]	'of a guest, of a host, hospitable'	[lūk-āris]	'of or belonging to a grove'

- While it's more complicated than this (in a way that might actually be problematic for subcategorization — *there may be a paper topic here...*), the basic generalization is:

(15) a. [-āris] when there is an [l] in the stem (dissimilation)
  b. [-ālis] elsewhere

- Nearby *l*'s within a stem/word are usually allowed in Latin, so this is not a general phonological process of the language.
- Also, there are other suffixes containing liquids that don't show equivalent alternations.
  - e.g. /-iter/ → [-iter], never *[-itel] (Stanton 2016:10, fn. 12)

→ So this looks like phonologically-conditioned allomorphy. (Could be morpheme-specific phonology...)

- Simplifying from Stanton, we can use a non-local co-occurrence constraint, penalizing pairs of [l]'s within a word, regardless of distance.

(16) ***[+lat]...[+lat]:** Assign one violation for each pair of [+lateral] segments (i.e. [l]'s) within a word.

- If this constraint outranks the morphological constraint preferring the default [-ālis] (I use Mascaró 2007's PRIORITY constraint below), then we correctly explain the distribution:

(17) [-āris] forms: dispreferred allomorph selected by dissimilation constraint

/sōl+{-ālis > -āris}/	*[+lat]...[+lat]	PRIORITY
a. sōl-ālis	*!	
b. ☞ sōl-āris		*

(18) [-ālis] forms: default allomorph selected in the absence of another [l]

/nāv+{-ālis > -āris}/	*[+lat]...[+lat]	PRIORITY
a. ☞ nāv-ālis		
b. nāv-āris		*!

- As long as regular Faithfulness constraints outrank *[+lat]...[+lat], we don't generate any ill effects elsewhere, namely dissimilation outside of this context:

(19) No dissimilation elsewhere: *clāvula* 'scion' (lit. 'little stick')

/clāvula/	IDENT-IO	*[+lat]...[+lat]	PRIORITY
a. ☞ clāvula		*	
b. clāvura	*!		

- These types of tier-based co-occurrence constraints are the only well-accepted long-distance phonological constraints. (Crucially, they are local on their tier, i.e. local with respect to a particular feature.)

⋆ As such, this is the only kind of opposite-side allomorphy conditioning that P ≫ M predicts, and that prediction is correct. Hence my disagreement with Paster.

  - If she means that only stem-edges in fact condition PCSA, this is self-evidently incorrect from infixation (though maybe somewhat less so in Kalin 2022's model), where stem internal material is involved in the conditioning.

- Furthermore, locality of conditioning in subcategorization is not a prediction but rather a stipulation or (if we're feeling generous) a conclusion:

(20) "A final prediction of the subcategorization approach is that affix allomorphs should occur adjacent to the phonological elements that condition their distribution. So, for example, a prefix allomorph should not be sensitive to an element at the right edge of the stem, nor should a suffix allomorph be sensitive to an element at the left edge of the stem. **This prediction follows from the assumption that, when an affix subcategorizes for a phonological element, nothing may intervene between the two.**[8]" (Paster 2009:23)

→ An assumption is not a prediction. We could easily envision a subcategorization system that allowed for exactly that. If this in fact accurately describes the attested typology, then this would be a *conclusion* — not a *prediction* — about the nature of subcat frames.

> n. 8, pp. 40–41: "Note that subcategorization frames make stricter requirements on adjacency than do phonological rules or constraints. As indicated earlier, morphemes may not subcategorize for elements below the level of C/V (except for phonological features linked to a C/V). This means that in the present formulation, phonological subcategorization (unlike rules or constraints, which can yield long-distance effects across transparent segments) cannot look for a phonological feature across any number of segments that do not bear a feature on the same tier (see also note 15). No additional stipulations must be made in order to require strict adjacency in PCSA, although there does exist an independently motivated principle (the Generalized Determinant Focus Adjacency Condition) that explicitly requires that '[e]ach phonologically constrained element must be adjacent to each constraining element' (Inkelas 1990: 201). A reviewer asks whether certain combinations of phonological subcategorizational requirements could result in non-local interactions between root elements and affix allomorphs; e.g. a prefix subcategorizing for a prosodic word that ends in a stop (since the prefix would still be adjacent to the PWd). This particular hypothetical example would be incompatible with a subcategorization-based analysis. The subcat frame would look like: [__[PWd . . . C[-continuant]#]]. Though the ellipsis notation is useful as a shorthand, it has no formal status and is not allowed to intervene between triggers and targets. Since the stop consonant is a crucial part of the trigger, the above is not a possible subcat frame.

⋆ So, I don't think locality is necessarily a good way of contrasting the two theories.

→ Optimization and opacity are.

5 Is PCSA always optimizing?

- When the selection between different morphs is phonologically optimizing (i.e. improving on some high-ranked phonological constraint), the **P ≫ M** approach works very nicely, and (Paster's version of) subcategorization seems like it's missing a generalization.
- The problem is, there are at least some cases where it doesn't look optimizing.

5.1 Apparently phonologically arbitrary distributions

- There are a number of PCSA patterns where the allomorphs don't seem to serve any different phonological function, including the following from Nevins (2011:15):

(21) Kaititj ergative suffix allomorphy: [-ŋ] after bisyllabic stems, [-l] after trisyllabic stems (Paster 2006)

a.	aki-ŋ	'head-ERG'	b.	aliki-l	'dog-ERG'
	ilt^{j}i-ŋ	'hand-ERG'		aɻuji-l	'man-ERG'
	ajnpni-ŋ	'pouch-ERG'		aɣiki-l	'sun-ERG'

(22) Axininca Campa genitive allomorphy: [-ni] after bimoraic stems, [-ti] elsewhere (Bye 2007)

a.	no-jorja-ni	'my manioc worm'	b.	i-wisiro-ti	'his small toucan'
	i-çaa-ni	'his anteater'		no-jairo-ti	'my termite'
	a-sari-ni	'our macaw'		a-jaarato-ti	'our black bee'

∗ Requires prefixes to be attached *after* the genitive suffix, or else the stem won't be bimoraic.

- In both of these cases, you get an alternation in the featural composition of a consonant, but this alternation serves no discernible purpose.
  → At present, such cases look like they do require arbitrary specification in the morphology.

- However, if some phonological motivation could be conjured up, then we could do without it.
  - It seems like most of the apparently arbitrary patterns are "syllable-counting allomorphy", i.e. the distribution of different morphs appears to be governed by the syllable count of the stem.
  - I don't think we have a good handle on how these work to begin with...

- Note that the subcat frames for these look a bit wonky too:

(23) Subcategorization frames for Kaititj ergative suffix allomorphy
  a. ERG ⇔ [-ŋ] / [$_{\text{STEM}}\sigma\sigma$]_
  b. ERG ⇔ [-l] / (elsewhere)

(24) Subcategorization frames for Axininca Campa genitive allomorphy
  a. GEN ⇔ [-ni] / [$_{\text{STEM}}\sigma\sigma$]_
  b. GEN ⇔ [-ti] / (elsewhere)

→ The subcat frame needs to see both edges of the stem (which seems to me to violate locality), or be able to count the contents of the stem (which the grammar is usually thought to not be able to do; but actually Paster thinks it can: Paster 2019).

⋆ There are other cases that are not based on syllable count (see Paster 2006), so until we can find a better way to handle all of them in the phonology, this is a strike against P ≫ M.
  - But just because it's a strike against P ≫ M doesn't mean it is an argument *for* subcategorization, unless that approach does have a good answer for it.

5.2 Apparently(/allegedly) phonologically "*perverse*" distributions

- Some PCSA distributions seem not only arbitrary, but actually counter to expected phonological patterns.
  → "perverse" in Paster's (2015) terms
- The banner case is definite suffix allomorphy in Haitian Creole (see Klein 2003, Bonet, Lloret, & Mascaró 2007, Paster 2015:229, and other references therein):

- In Haitian Creole, the definite determiner surfaces as *-la* with consonant-final stems (25a).
- But, it surfaces as *-(j/w)a* with vowel-final stems (25b,c), yielding a hiatus which needs to be repaired by glide epenthesis/spreading.

(25) Haitian Creole definite suffix (data taken from Hall 1953, Klein 2003)

a. C-final stems → [-la]

Indef.	Def.	Gloss
pitit	pitit-la	'child'
kaj	kaj-la	'house'
malad	malad-la	'sick'
ʃat	ʃat-la	'cat'
liv	liv-la	'book'
bagaj	bagaj-la	'thing'
kaw	kaw-la	'crow'

b. $V_{[+tense]}$-final stems → [-ja/-wa]

Indef.	Def.	Gloss
papje	papje-ja	'paper'
pje	pje-ja	'foot'
lapli	lapli-ja	'rain'
diri	diri-ja	'rice'
po	po-wa	'skin'
bato	bato-wa	'boat'
ru	ru-wa	'wheel'

c. $V_{[-tense]}$-final stems → [-a]

Indef.	Def.	Gloss
papa	papa-a	'father'
bujwa	bujwa-a	'kettle'
bɔkɔ	bɔkɔ-a	'sorcerer'
vɛ	vɛ-a	'glass'

- The difference between (25b) and (25c) is in the ability of the final vowel to "split" into *vowel+glide*.
  - Tense vowels [i,e,u,o] can split into glides because glides are [+tense] (25b)
  - Lax vowels [ɛ,a,ɔ] cannot split into glides because they are [−tense] (25c)

→ Both types come from underlying /-a/, with the glide in (25b) derived in the phonology.
  - i.e., the glides in (25b) are due to phonologically *driven* allomorphy.

⋆ But the fact that (25b) and (25c) *don't* take [-la], yet (25a) *does* is very surprising.
  - If type (25c) took [-la], it would avoid hiatus (i.e. a violation of ONSET)
  - If type (25b) took [-la], it would avoid glide insertion (i.e. an INTEGRITY-IO ('*no splitting*') violation)
  - If type (25a) took [-a], it would avoid a coda (i.e. a NOCODA violation).

→ Everything seems to be exactly backwards from the point of view of the phonology; hence "perverse".

(26) Haitian Creole definite suffix allomorphy with syllable structure constraints (doesn't work)

i. Vowel-final stems → [-a]

/papa+{-a, -la}$_{DEF}$/	ONSET	NOCODA	USE:/-a/	USE:/-la/
a. ☹ papa.-a	*!			*
b. 💣 papa.-la			*	

ii. Consonant-final stems → [-la]

/pitit+{-a, -la}$_{DEF}$/	ONSET	NOCODA	USE:/-a/	USE:/-la/
a. 💣 piti.t-a				*
b. ☹ pitit.-la		*!	*	

→ Paster (2006, 2009, 2015) and others thus use this case to argue against the **P** ≫ **M** approach.

- But that's probably not what it's actually about:
  - Following Klein (2003) and Bonet, Lloret, & Mascaró (2007), we can do a better job by assuming that the conditioning factor is (something like) morphophonological alignment:

(27) **ALIGN(STEM, R; σ, R)** [cf. McCarthy & Prince 1993]
Assign a violation * if the right edge of the stem does not coincide with the right edge of a syllable.

- For vowel-final stems (28.i), either allomorph — [-a] (28.i.a) vs. [-la] (28.i.b) — will satisfy ALIGN-R, because neither will induce resyllabification.
  - As long as we treat *-a* as the default (USE:/-a/ ≫ USE:/-la/), and USE:/-a/ outranks the syllable structure constraints (ONSET and NOCODA), we properly select the *-a* allomorph in this case.
- For consonant-final stems (28.ii), using the default [-a] (28.ii.a) would induce re-syllabification across the morpheme boundary, creating a mismatch between syllable boundary and morpheme boundary.
  - Therefore, as long as ALIGN-R ≫ USE:/-a/, we will correctly prefer the alternative morph [-la] (28.ii.b).

(28) Haitian Creole definite suffix allomorphy with morphophonological alignment

i. Vowel-final stems → [-a] (default)

/papa+{-a, -la}$_{DEF}$/	ALIGN-R	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. ☞ papa.-a			*	*	
b. papa.-la		*!			

ii. Consonant-final stems → [-la] (alternative, driven by ALIGN)

/pitit+{-a, -la}$_{DEF}$/	ALIGN-R	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. piti.t-a	*!		*		
b. ☞ pitit.-la		*			*

How to handle the glide insertion cases

(29)
a. **INTEGRITY-IO:** Assign one violation for each underlying segment that corresponds to multiple output segments. (McCarthy & Prince 1995)
b. **IDENT[tense]-IO:** Assign one violation for each output segment that differs in [±tense] from its input correspondent.
c. ***LAXGLIDE:** Assign one violation for each [-tense] glide in the output (*[−tense, −consonantal, −syllabic]).

- Assuming that the glide relates via the IDENT constraint to the stem-final vowel (either in the input or the output), we can derive the distribution as follows:

(30) Glide insertion vs. hiatus

i. Hiatus with lax vowels

/vɛ+{-a, -la}$_{DEF}$/	*LAXG	ID[tns]	ALN-R	USE:/-a/	ONSET	INTEG	USE:/-la/
a. ☞ vɛ.-a					*		*
b. vɛ.-la				*!			
c. vɛ.-**j**a		*!				*	*
d. vɛ.-**j**a	*!					*	*

ii. Glide insertion with tense vowels

/pje+{-a, -la}$_{DEF}$/	*LAXG	ID[tns]	ALN-R	USE:/-a/	ONSET	INTEG	USE:/-la/
a. pje.-a					*!		*
b. pje.-la				*!			
c. ☞ pje.-**j**a						*	*
d. pje.-**j**a	*!	*!				*	*

∗ This requires us to assume that the glide segment does not count as part of the root/stem, and thus does not incur an ALIGN-R violation.

∗ The ranking CONTIGUITY-IO ≫ INTEGRITY-IO will rule out morpheme-internal glide epenthesis (under the right representational assumptions), thus correctly allowing morpheme-internal hiatus.
  - If there isn't morpheme-internal hiatus, then I think the reverse ranking will be sufficient.

- This looks good, but there's actually two problems.

1. New candidate (31c), where you simply don't resyllabify, should win if the relevant constraint is ALIGN-R, because ONSET (and NOCODA) have to be ranked low to explain the *-a* forms.

(31) Consonant-final stems → [-la] (alternative, driven by ALIGN)

/pitit+{-a, -la}$_{DEF}$/		ALIGN-R	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. piti.t-a		*!		*		
b. ☹ pitit.-la			*!			*
c. 💣 pitit.-a				*	*	*

2. In Haitian Creole, certain *obstruent + l* sequences, e.g. *kl*, syllabify as a complex onset, therefore:
   - *syèk* 'century' → *syèk-la* [sye.kla] (*[syek.la]) 'the century' (Ben Storme, personal communication)
   - If re-syllabification is required anyway, these stems should take *-a* (32a) because it is the preferred allomorph, but don't.

(32) *k*-final stems → [-la] even with resyllabification

/pitit+{-a, -la}$_{DEF}$/		*k.l	ALIGN-R	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. 💣 sye.k-a			*		*		
b. syek.-la		*!		*			*
c. ☹ sye.kl-a			*	*!			

- I think this may be saveable if we replace the notion of syllabification with the notion of **CV transitions**.
  - CV transitions are contextual changes in the formant frequencies (esp. F2) at the juncture between a consonant and a vowel.

- The constraint in (33), which references the presence/absence of CV transitions on consonants, will penalize placing a suffix vowel after a stem-final consonant.

(33) **DEP[CV transitions]/C-IO:** Assign one violation for each consonant bearing CV transitions in the output that lacked CV transitions in the input.[1]

- Continuing to assume that *-a* is the default, replacing ALIGN-R with this constraint correctly diverts the derivation to *-la* just in the case of a consonant-final stem, but doesn't suffer from any of the syllabification problems in (31) or (32).

(34) Consonant-final stems → [-la] with DEP[CV transitions]

/pitit+{-a, -la}$_{DEF}$/		DEP[CV trans]	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. piti.t-a		*!		*		
b. ☞ pitit.-la			*			*
c. pitit.-a		*!		*	*	*

(35) *k*-final stems → [-la] with DEP[CV transitions]

/pitit+{-a, -la}$_{DEF}$/		*k.l	DEP[CV trans]	USE:/-a/	USE:/-la/	ONSET	NOCODA
a. sye.k-a			*!		*		
b. syek.-la		*!		*			*
c. ☞ sye.kl-a				*			

[1] This particular formulation, at least, assumes that CV transitions, and thus detailed phonetic information, are present in the phonological input; cf. Flemming (2008).

⋆ **Take-home message**
- Haitian Creole can be analyzed in a P ≫ M framework by using phonetically-detailed "P" constraints.
- Maybe the other "perverse" patterns can be explained if we think more creatively about the phonetics.

• How does subcategorization account for the pattern? Simply list the environments:

(36) Subcategorization frames for Haitian Creole definite allomorphy (C = [−syllabic], V = [+syllabic])
a. DEF ⇔ [-la] / C_
b. (DEF ⇔ [-ja] / $V_{[+tense,-back]}$_)
c. (DEF ⇔ [-wa] / $V_{[+tense,+back]}$_)
d. DEF ⇔ [-a] / (elsewhere)

∗ Could either list the glide allomorphs in the morphology, or select *-a* and then apply phonology.

6 Opacity in allomorph selection: input vs. surface

• The other contrasting prediction we'll talk about today is at what level of phonological representation are allomorphs selected?

(37) a. **Subcategorization:** only at the underlying representation (UR) / input, because it happens in the morphology
b. **P ≫ M:** only at the surface representation (SR) / output, because OT markedness constraints are output-oriented

→ Paster (2009), Nevins (2011), and others show that there are cases where it *must* be input-oriented, seemingly supporting subcategorization.
- Kalin (2022) makes a very similar argument for subcategorization based on infixation.

6.1 Japanese

• Consider a typical case from Japanese (Nevins 2011:17, citing Gibson 2008):
- There are several morphemes that have suppletive (though phonetically similar) allomorphs conditioned by stem-final C vs. V.
- There is a phonological deletion rule:

(38) /w/ → Ø / _$V_{[-low]}$ (= *w$V_{[-low]}$ ≫ MAX[w]-IO)

- The allomorph selected for /w/-final stems is the one appropriate to consonants, even though on the surface the root ends up being vowel-final.

(39) Japanese opaque allomorphy with [w]-final stems

		C-final root	V-final root	[w]-final roots	
		jom 'read'	ne 'sleep'	iw 'say'	jow 'get drunk'
NON-PAST	{u/ru}	jom-u	ne-ru	**i-u**	**jo-u**
INCHOATIVE	{oo/joo}	jom-oo	ne-joo	**i-oo**	**jo-oo**
NEGATIVE	{anai/nai}	jom-anai	ne-nai	iw-anai	jow-anai

• This looks like **opacity**:
→ The conditioning environment for allomorph selection is no longer present on the surface.

⋆ Parallel OT has problems with many types of opacity, and this holds true here:

- To derive the general distribution, we need ONSET and/or NOCODA to outrank the USE constraints.
  - If only ONSET is high ranked, we need USE:/-u/ ≫ USE:/-ru/.
  - If only NOCODA is high ranked, we need USE:/-ru/ ≫ USE:/-u/.

(40) Deriving the basic allomorph distribution in Japanese with P ≫ M

i. C-initial allomorph with V-final stems

/ne+{-u, -ru}/		NoCoda	Onset	Use:/-u/	Use:/-ru/
a. ne.-u			*!		*
b. ☞ ne.-ru				*	

ii. V-initial allomorph with (non-/w/) C-final stems

/jom+{-u, -ru}/		NoCoda	Onset	Use:/-u/	Use:/-ru/
a. ☞ jo.m-u					*
b. jom.-ru		*!		*	

- The problem is, when we overlay the /w/-deletion process (*$wV_{[-low]}$ ≫ MAX), we predict *deletion + -ru* (41d) rather than *deletion + -u* (41c).

(41) Failure with /w/-final roots → predicts non-opaque "shifting"

/jow+{-u, -ru}/		*$wV_{[-low]}$	NoCoda	Onset	Use:/-u/	Use:/-ru/	Max
a. jo.w-u		*!				*	
b. jow.-ru			*!		*		
c. ☹ jo.-u				*!		*	*
d. 💣 jo.-ru					*		*

- Maybe ONSET is ranked low? Requires USE:/-ru/ ≫ USE:/-u/. If MAX is low-ranked, this wrongly predicts *deletion + -ru* should be triggered by all root-final consonants (42.ii.d) not just /w/, and doesn't even fix the /w/ problem (42.iii).

(42) Attempting to derive allomorph distribution in Japanese with P ≫ M

i. C-initial allomorph with V-final stems

/ne+{-u, -ru}/		*$wV_{[-low]}$	NoCoda	Use:/-ru/	Use:/-u/	Onset	Max
a. ne.-u				*!		*	
b. n.-u				*!			*
c. ☞ ne.-ru					*		

ii. Failure to derive V-initial allomorph with other C-final stems

/jom+{-u, -ru}/		*$wV_{[-low]}$	NoCoda	Use:/-ru/	Use:/-u/	Onset	Max
a. ☹ jo.m-u				*!			
b. jom.-ru			*!		*		
c. jo.-u				*!		*	*
d. 💣 jo.-ru					*		*

iii. Failure to derive V-initial allomorph with /w/-final roots

/jow+{-u, -ru}/		*wV$_{[-low]}$	NoCoda	Use:/-ru/	Use:/-u/	Onset	Max
a.	jo.w-u	*!		*			
b.	jow.-ru		*!		*		
c. ☹	jo.-u			*!		*	*
d. 💣	jo.-ru				*		*

- We can fix (42.ii) by ranking Max ≫ Use:/-ru/ (43.i).
  → But this still makes it impossible to get *deletion + -u* for /w/-final roots (43.ii).

(43) i. V-initial allomorph with other C-final stems

/jom+{-u, -ru}/		*wV$_{[-low]}$	NoCoda	Use:/-ru/	Use:/-u/	Onset	Max
a. ☞	jo.m-u				*		
b.	jom.-ru		*!			*	
c.	jo.-u			*!	*		*
d.	jo.-ru			*!		*	

ii. Failure with /w/-final roots → again predicts non-opaque "shifting"

/jow+{-u, -ru}/		*wV$_{[-low]}$	NoCoda	Max	Use:/-ru/	Use:/-u/	Onset
a.	jo.w-u	*!					*
b.	jow.-ru		*!			*	
c. ☹	jo.-u			*	*!		*
d. 💣	jo.-ru			*		*	

- There are a number of other equivalent cases (see Paster 2006, Nevins 2011:17–18).

→ This type of opaque allomorph selection indeed seems like it won't work in a basic Parallel OT implementation of P ≫ M.

6.2 Opacity in Parallel vs. Stratal phonology

- But, as Nevins points out, the problem may simply be that we are dealing with garden-variety opacity, which we already knew Parallel OT would have trouble with.

→ If we understand this as simple opacity, we could say that allomorph selection can operate at a level of the *phonology* that precedes the level where the opacifying phonological process takes place.

- This is doable in phonological frameworks which permit intermediate levels of representation, e.g.
  - Lexical Phonology (Kiparsky 1982) / Stratal OT (Kiparsky 2000)
  - "Optimal Interleaving" in OT with Candidate Chains (OT-CC) (Wolf 2008, 2015).

→ Opacity in allomorph selection may therefore be amenable to general approaches to opacity (including Parallel OT fixes, such as they are), and thus does not on its own necessarily decide between the different views of allomorphy.
  ↪ ...but then we need to understand how opacity interacts with morphology more generally.

7 Today's conclusions

- I don't think that all of Paster's contrasting predictions about subcategorization vs. P ≫ M are correctly stated (locality).
- I don't think that all of Paster's conclusions about the other predictions are completely correct ("perverse" phonological conditioning and opacity may be compatible with P ≫ M).

→ I think it's still an open debate how best to capture phonologically-conditioned allomorphy.

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