Class 5
Base-Reduplicant Correspondence Theory and Reduplication-Phonology Interactions

2/22/18

1 Reduplication-phonology interactions

- Early generative phonology assumed that phonological processes (which include distributional restrictions) should apply equally to reduplicants as to unreduplicated words.
  - ○ Assumption is that reduplicative copying happens first, then phonological process should apply.
- Wilbur (1973) first observed that this is not always the case, that all such cases promote identity between base and reduplicant.

⇒ McCarthy & Prince (1995) pick up on this observation, and use it as the core motivation for positing BR correspondence.

- There are three main types of (claimed) reduplication-phonology interactions:

(1) a. **Normal application:**
A phonological processes/distribution applies in reduplicated words in all and only the places where its context is met.

b. **Overapplication:**
A phonological processes/distribution applies in reduplicated words even in places where its context *is not* met.

c. **Underapplication:**
A phonological processes/distribution *fails* to apply in reduplicated words even in places where its context *is* met.

  - ○ In order to probe these different interactions, we need to find reduplication patterns that set up distinct contexts in the base and in the reduplicant for corresponding segments that are involved in some sort of alternation.

- A lot of the data which was argued to be evidence of overapplication and underapplication has been challenged/reanalyzed since it was first used in this context (see esp. Inkelas & Zoll 2005).
- First I'll show you some of the claimed evidence, and how it would argue for BRCT.
- Then I'll tell you what Inkelas & Zoll (2005) think the facts are.
  - → Spoiler alert: their picture of the facts is bad for BRCT.
- Then I'll show you their theory for analyzing those facts: Morphological Doubling Theory.

1.1 Normal Application

- "Normal application" refers to cases where a process/distribution generally applies in some context in a language also applies in that context (and only in that context) in reduplication.
  - ○ The distribution of [d] ∼ [ɾ] in Tagalog is one such example.

- Tagalog has an intervocalic flapping process.

(2) a. /d/ → [ɾ] / V_V
  b. /d/ → [d] elsewhere (namely, #_ & C_)

- This distribution does hold in reduplication, even if it means that a [d] corresponds to a [ɾ]:

(3) Flapping in Tagalog (McCarthy & Prince 1995:3; Carrier 1979:150)

	Stem	Reduplicated			Gloss
a.	datiŋ	d̲-um-ā̲-ɾatiŋ	*ɾ̲-um-ā̲-ɾatiŋ	*d̲-um-ā̲-datiŋ	‘arrive’
b.	diŋat	ka-ɾ̲i̲ŋ̲a̲t̲-diŋat	*ka-ɾ̲i̲ŋ̲a̲t̲-ɾiŋat	*ka-d̲i̲ŋ̲a̲t̲-diŋat	‘suddenly’

- In (3a):
  - The reduplicant-initial consonant is not intervocalic, so (2a) should not apply to it, i.e. it should surface as [d].
    - It is [d], therefore *normal application*.
  - The root-initial consonant is intervocalic, so (2a) should apply to it, i.e. it should surface as [ɾ].
    - It is [ɾ], therefore *normal application*.
- In (3b):
  - The contexts are reversed, but both still exhibit the expected outcomes of (2), therefore *normal application*.

1.2 Overapplication

- “Overapplication” (at least its basic type) refers to cases where a phonological rule appears to apply in the reduplicant even though the environment for the rule is not met by the reduplicant.
  - The environment for the rule *is* met in the base, and it applies there as expected.
- The distribution of [h] in Javanese is such a case.

- Javanese has a deletion process that deletes *h* intervocalically:

(4) a. /h/ → Ø / V_V
  b. /h/ → [h] elsewhere (namely, _C & _#)

- The application of these rules outside of reduplication is illustrated by (5a).

(5) Javanese *h* deletion (McCarthy & Prince 1995:2)

	Stem	i. _+C	ii. _+V	iii. *“Expected” Red*	Gloss
a.	anɛh	anɛh-ku	anɛ.-e	—	‘strange’
b.	bəḍah	bəḍah-bəḍah	bəḍa-bəḍa.-e	*bəḍah-bəḍa.-e	‘broken’
c.	ḍajɔh	ḍajɔh-ḍajɔh	ḍajɔ-ḍajɔ.-e	*ḍajɔh-ḍajɔ.-e	‘guest’

- This distribution doesn't fully hold in reduplication (5b,c).
    - I assume the reduplicant is the first copy not the second, but this ultimately makes little difference.
  - When the base is followed by a consonant or nothing (column i.), [h] appears in both copies.
    - In both positions, it should *not* be subject to the deletion rule (4a), and it evidently is not.
  - When the base is followed by a V-initial suffix (column ii.), the second copy meets the context for the deletion rule (4a), so we expect deletion, and we get it.
    - However, the context at the juncture between the copies has not changed — it does not meet the environment for the deletion rule (4a) — so we should not expect the deletion rule to apply.
    - Yet it does appear to "apply", since the *h* appears to be "deleted".
- This is "**overapplication**" because the deletion rule has seemingly applied outside of its context.

- This case at least can be analyzed through rule ordering, assuming that reduplicative copying is a rule that can be ordered, and it is ordered after *h*-deletion.

(6) Copying rule ≈ if you have RED, copy the root material present at that stage of the derivation

(7) Javanese rule ordering

		/anɛh-ku/	/anɛh-e/	/RED-bəḍah/	/RED-bəḍah-e/
Rule 1.	*h*-deletion	—	anɛ.-e	—	RED-bəḍa-e
Rule 2.	Copying	—	—	bəḍah-bəḍah	bəḍa-bəḍa-e
		[anɛhku]	[anɛ.e]	[bəḍahbəḍah]	[bəḍabəḍa.e]

- This ordering is essential, as the reverse order would generate the wrong result, i.e. *normal application*.

(8) Javanese rule ordering reversed — wrong outcome

		/anɛh-ku/	/anɛh-e/	/RED-bəḍah/	/RED-bəḍah-e/
Rule 2.	Copying	—	—	bəḍah-bəḍah	bəḍah-bəḍah-e
Rule 1.	*h*-deletion	—	anɛ.-e	—	bəḍah-bəḍa-e
		[anɛhku]	[anɛ.e]	[bəḍahbəḍah]	*[bəḍahbəḍa.e]

- McCarthy & Prince (1995:2) define overapplication independent of framework as:

> "A phonological mapping will be said to overapply when it introduces, in reduplicative circumstances, a disparity between the output and the lexical stem that is not expected on purely phonological grounds."

- Put another way, overapplication means that the reduplicant resembles the base more than the root.
  - "*h*-deletion" "applies" in the reduplicant because it applied in the base.
  - This is at the heart of the rule ordering analysis
    - The reduplicant copies a constituent which has already undergone the process.
    - It does not undergo the process *per se*.

1.3 Underapplication

- Underapplication is the opposite, but notionally equivalent.
- In terms of rule application, "underapplication" refers to cases where a phonological rule *fails* to apply in the reduplicant even though the environment for the rule *is* met in the reduplicant.
  - The environment for the rule *is not* met in the base, and it does not apply there, as expected.
- Akan reduplication is an example.

- Akan has a CV reduplicant, where the V is always [ɪ], regardless of the base vowel.
- Akan disallows velars and *h* (maybe others) before high front [ɪ] (and maybe others):

(9) a. /k,h/ → [tɕ,ç] / _ ɪ
b. /k,h/ → [k,h] elsewhere

⋆ N.B.: McCarthy, Kimper, & Mullin (2012:211–212) argue this isn't an active phonological process.

- This distribution does not hold in reduplication
  - The palatalization process fails to apply — i.e. "underapplies" — in the reduplicant.

(10) Akan palatalization (M&P:3)

	Stem	Reduplicated	"Expected"	Gloss
a.	kaʔ	k̲ɪ̲-kaʔ	*t̲ɕ̲ɪ̲-kaʔ	'bite'
b.	hawʔ	h̲ɪ̲-hawʔ	*ç̲ɪ̲-hawʔ	'trouble'

- This sort of underapplication is also amenable to a rule ordering analysis.
  - If the palatalization rule applies before the reduplicant [ɪ] is introduced into the derivation, palatalization will be not have the chance to apply, and we can derive the desired result.

(11) Akan rule ordering 1

		/RED-kaʔ/	/kɪʔ/ (hypothetical)
Rule 1.	Palatalization	—	tɕɪʔ
Rule 2.	Reduplication w/ [ɪ]	k̲ɪ̲-kaʔ	—
		k̲ɪ̲-kaʔ	[tɕɪʔ]

(12) Akan rule ordering 2

		/RED-kaʔ/	/kɪʔ/ (hypothetical)
Rule 1.	Reduplication	k̲a̲-kaʔ	—
Rule 2.	Palatalization	—	tɕɪʔ
Rule 3.	Reduction to [ɪ]	k̲ɪ̲-kaʔ	—
		k̲ɪ̲-kaʔ	[tɕɪʔ]

- McCarthy & Prince (1995:3) describe underapplication independent of framework as:

> "...the general phonological pattern of the language leads us to expect a disparity between the underlying stem (with *k*) and the reduplicant (where we ought to see *tɕɪ*), and we do not find it. The effect is to make the actual reduplicant more closely resemble the stem."

- Therefore, both overapplication and underapplication seem to be operating so as to make the base and reduplicant more similar.

2 Base-Reduplicant Correspondence Theory

- The fact that overapplication and underapplication (appear to) exist, and that they can be characterized as enhancing the similarity between base and reduplicant, led McCarthy & Prince (1995) to propose the notion of **Correspondence** between base and reduplicant (and along other dimensions).

(13) Base-Reduplicant Correspondence Theory "Basic Model" (McCarthy & Prince 1995:4)

Input	/ AFX$_{RED}$ + STEM /
	↕ *IB(/IO) Correspondence*
Output	RED ⟷ BASE
	BR Correspondence

- To derive standard cases of normal application, overapplication, and underapplication, we just need three types of constraints:
  1. Markedness constraints
  2. IO faithfulness constraints
  3. BR faithfulness constraints

- In all cases where we are dealing with some kind of "application", we necessarily have a phonological process.
  - In standard OT, phonological processes entail the ranking: MARKEDNESS ≫ IO-FAITHFULNESS
- The main question, then, is how do BR faithfulness constraints rank relative to this ranking fragment?
  - Also: what happens when there are additional markedness constraints and/or IO faithfulness constraints in play?

2.1 Analyzing normal application

- Tagalog shows normal application:

(14) a. /d/ → [ɾ] / V_V
b. /d/ → [d] elsewhere (namely, #_ & C_)

(15) Flapping in Tagalog (McCarthy & Prince 1995:3; Carrier 1979:150)

	Stem	Reduplicated			Gloss
a.	datiŋ	d̲-um-ā̲-ɾatiŋ	*ɾ̲-um-ā̲-ɾatiŋ	*d̲-um-ā̲-datiŋ	‘arrive’
b.	diŋat	ka-ɾ̲i̲ŋ̲a̲t-diŋat	*ka-ɾ̲i̲ŋ̲a̲t-ɾiŋat	*ka-d̲i̲ŋ̲a̲t-diŋat	‘suddenly’

- First, let’s pin down the ranking for the allophonic distribution.
  - Fully allophonic distributions are characterized by $\mathbb{M}_1 \gg \mathbb{M}_2 \gg$ Faith-IO

(16) Flapping ranking: *[VdV] $\gg$ *[ɾ] $\gg$ Ident[F]-IO

- [F] could be [±continuant], [±sonorant], maybe others.

(17) Intervocalic flapping (w/ maximally unfaithful input)

/ada/	*[VdV]	*[ɾ]	Ident[F]-IO
a. ada	*!		
b. ☞ aɾa		*	*

(18) Non-intervocalic [d] (w/ maximally unfaithful input)

/ɾa/	*[VdV]	*[ɾ]	Ident[F]-IO
a. ☞ da			*
b. ɾa		*!	

- **Question:** Where must Ident[F]-BR rank to derive normal application?
- **Answer:** Ident[F]-BR has to rank below *both* markedness constraints.
  - This ensures that it will play no role in determining which segment appears in any given position.
  - Only markedness will play a role, therefore normal application.

(19) Normal application in reduplication

/ka, RED, diŋat/	*[VdV]	*[ɾ]	Ident[F]-IO	Ident[F]-BR
a. ka-d̲i̲ŋ̲a̲t-diŋat	*!			
b. ka-ɾ̲i̲ŋ̲a̲t-ɾiŋat		**!	*	
c. ☞ ka-ɾ̲i̲ŋ̲a̲t-diŋat		*		*
d. ka-d̲i̲ŋ̲a̲t-ɾiŋat	*!	*	*	*

(20) Normal application in reduplication

/um, RED, datiŋ/	*[VdV]	*[ɾ]	Ident[F]-IO	Ident[F]-BR
a. d̲-um-ā̲-datiŋ	*!			
b. ɾ̲-um-ā̲-ɾatiŋ		**!	*	
c. ɾ̲-um-ā̲-datiŋ	*!	*		*
d. ☞ d̲-um-ā̲-ɾatiŋ		*	*	*

2.2 Analyzing overapplication

- **Question:** What if IDENT[F]-BR had ranked between the two markedness constraints, rather than below both?

(21) Hypothetical ranking for Tagalog′: *[VdV] ≫ IDENT[F]-BR ≫ *[ɾ] ≫ IDENT[F]-IO

- **Answer:** We get either *(standard) overapplication* (22) or *back-copying overapplication* (23).
  → *Back-copying overapplication* is when a process applies normally to the *reduplicant*, and overapplies in the *base*.

- How to interpret this ranking:
  1. Any time a d∼ɾ segment would be intervocalic, it must be [ɾ] (*[VdV] ≫ *[ɾ])
  2. Any time you have BR-corresponding d∼ɾ segments, they must be the same, even if it creates extra flaps (IDENT[F]-BR ≫ *[ɾ])

  ⇒ If the BR-corresponding d∼ɾ segments are in mismatching contexts (i.e. one is intervocalic and the other is not), it will always be resolved in favor of [ɾ], because the intervocalic one must be [ɾ].
  ◦ Since everything dominates IDENT[F]-IO, the base will not get any special treatment.

- Therefore, whether we get standard overapplication or back-copying overapplication is simply a matter of which correspondent is intervocalic and which one is not.

  ◦ In the partial reduplication case, the base correspondent is in intervocalic position, so flapping overapplies to the reduplicant correspondent (standard overapplication).

(22) Overapplication in Tagalog′

/um, RED, datiŋ/	*[VdV]	IDENT[F]-BR	*[ɾ]	IDENT[F]-IO
a. d-um-ā-datiŋ	*!			
b. ☞ ɾ-um-ā-ɾatiŋ			**	*
c. ɾ-um-ā-datiŋ	*!	*	*	
d. d-um-ā-ɾatiŋ		*!	*	*

  ◦ In the total reduplication case, the reduplicant correspondent is in intervocalic position, so flapping overapplies to the base correspondent (back-copying overapplication).

(23) Back-copying overapplication in Tagalog′

/ka, RED, diŋat/	*[VdV]	IDENT[F]-BR	*[ɾ]	IDENT[F]-IO
a. ka-diŋat-diŋat	*!			
b. ☞ ka-ɾiŋat-ɾiŋat			**	*
c. ka-ɾiŋat-diŋat		*!	*	
d. ka-diŋat-ɾiŋat	*!	*	*	*

- The same situation would obtain if IDENT[F]-BR ≫ *[VdV].

⇒ The crucial ranking for overapplication is that FAITH-BR dominates $\mathbb{M}_2$ (i.e. *[ɾ]).

- To confirm, let's look back at Javanese *h*-deletion, which was a real case of overapplication.
  - Since there is no obvious way to distinguish which copy is the base and which is the reduplicant, we don't know if it's back-copying or standard overapplication.

(24) a. /h/ → Ø / V_V
b. /h/ → [h] elsewhere (namely, _C & _#)

(25) Javanese *h* deletion (McCarthy & Prince 1995:2)

	Stem	i. _+C	ii. _+V	iii. *"Expected" Red*	Gloss
a.	anɛh	anɛh-ku	anɛ.-e	—	'strange'
b.	bəḍah	bəḍah-bəḍah	bəḍa-bəḍa.-e	*bəḍah-bəḍa.-e	'broken'
c.	ḍajɔh	ḍajɔh-ḍajɔh	ḍajɔ-ḍajɔ.-e	*ḍajɔh-ḍajɔ.-e	'guest'

- One difference between this case and the previous case is that this is a *neutralizing* distribution (the contrast between *h* and Ø is neutralized intervocalically, but maintained elsewhere).
  - In standard OT, neutralization is characterized by the ranking $\mathbb{M}_1 \gg$ FAITH-IO $\gg \mathbb{M}_2$

(26) *h*-deletion ranking: *[VhV] ≫ MAX[h]-IO ≫ *[h]

(27) Intervocalic *h*-deletion

/anɛh-e/	*[VhV]	MAX[h]-IO	*[h]
a. anɛhe	*!		*
b. ☞ anɛ.e		*	

(28) /h/ retained elsewhere

/anɛh-ku/	*[VhV]	MAX[h]-IO	*[h]
a. ☞ anɛhku			*
b. anɛku		*!	

- The relevant BR-faithfulness constraint is DEP-BR. If this ranks above the IO-faithfulness constraint, we successfully derive overapplication.
  - Deletion in the base is transferred to the reduplicant because the reduplicant is not permitted to maintain segments not maintained in the base (DEP[h]-BR).

(29) Overapplication of *h*-deletion

/RED-bəḍah-e/	*[VhV]	DEP[h]-BR	MAX[h]-IO	*[h]
a. bəḍah-bəḍah-e	*!			**
b. bəḍah-bəḍa-e		*!	*	*
c. ☞ bəḍa-bəḍa-e			*	
d. bəḍa-bəḍah-e	*!			*

- This is exactly what we saw with the ranking permutations for Tagalog′.
  - We derived overapplication when the BR-faithfulness constraint outranked (at least) the second constraint in the ranking that determined the normal distribution.

- Note that MAX[h]-BR must dominate [*h] in order to preserve the final [h] in the reduplicant in the non-deletion cases:

(30) *h*-retention in the general case

/RED-bəḍah/	*[VhV]	DEP[h]-BR	MAX[h]-IO	MAX[h]-BR	*[h]
a. ☞ bəḍah-bəḍah					**
b. bəḍah-bəḍa		*!	*		*
c. bəḍa-bəḍa			*!		
d. bəḍa-bəḍah				*!	*

- The reverse ranking would be a case of the emergence of the unmarked: [h] would be permitted (non-intervocalically) generally, but not in the reduplicant.

2.3 Analyzing underapplication

- Underapplication can't be derived from these types of constraints alone.
  - Underapplication requires there to be another (markedness) constraint that penalizes overapplication.
  - Underapplication results when BR-faithfulness must be satisfied and that other constraint blocks overapplication.

- Akan is our example of underapplication:

(31) a. /k,h/ → [tɕ,ç] / _ ɪ
b. /k,h/ → [k,h] elsewhere

(32) Akan palatalization (M&P:3)

	Stem	Reduplicated	"Expected"	Gloss
a.	kaʔ	kɪ-kaʔ	*tɕɪ-kaʔ	'bite'
b.	hawʔ	hɪ-hawʔ	*çɪ-hawʔ	'trouble'

- M&P (1995) assume that palatalization in Akan is fully allophonic (albeit without alternations), which would require the same sort of ranking as in Tagalog.

(33) Palatalization (w/ maximally unfaithful input)

/kɪ/	*[kɪ]	*[tɕ]	IDENT[F]-IO
a. kɪ	*!		
b. ☞ tɕɪ		*	*

(34) No palatals elsewhere

/tɕa/	*[kɪ]	*[tɕ]	IDENT[F]-IO
a. ☞ ka			*
b. tɕa		*!	

- Underapplication occurs to render the base and reduplicant more similar.
  - But we don't get underapplication when we just add IDENT[F]-BR to the top of the ranking.
  - Instead we just get overapplication.

(35) Underapplication of palatalization fails

/RED, kaʔ/	IDENT[F]-BR	*[kɪ]	*[tɕ]	IDENT[F]-IO
a. ☹ kɪ-kaʔ		*!		
b. tɕɪ-kaʔ	*!		*	
c. 💣 tɕɪ-tɕaʔ			**	*

- To get underapplication, we need another constraint that penalizes the overapplication candidate.

→ M&P propose OCP-PAL, which penalizes two palatals in a row.

(36) Underapplication of palatalization succeeds

/RED, kaʔ/	OCP-PAL	IDENT[F]-BR	*[kɪ]	*[tɕ]	IDENT[F]-IO
a. ☞ kɪ-kaʔ			*		
b. tɕɪ-kaʔ		*!		*	
c. tɕɪ-tɕaʔ	*!			**	*

- Notice now that placing IDENT[F]-BR *between* the two allophonic markedness constraint rather than *above* them both reverts back to normal application.

(37) Normal application with blocker in Akan′

/RED, kaʔ/	OCP-PAL	*[kɪ]	IDENT[F]-BR	*[tɕ]	IDENT[F]-IO
a. kɪ-kaʔ		*!			
b. ☞ tɕɪ-kaʔ			*	*	
c. tɕɪ-tɕaʔ	*!			**	*

2.4 General recipes for different types

- The ranking schema for the different types of interactions are:

(38) a. Normal application
MARKEDNESS ≫ IO-FAITH ≫ BR-FAITH

b. Overapplication
BR-FAITH, MARKEDNESS ≫ IO-FAITH

c. Underapplication
BR-FAITH + BLOCKER ≫ MARKEDNESS ≫ IO-FAITH

- These schema hold regardless of whether we are dealing with an allophonic distribution or a neutralizing distribution.
  - Allophonic: $\mathbb{M}_2$ between MARKEDNESS ($\mathbb{M}_1$) and IO-FAITH
  - Neutralizing: $\mathbb{M}_2$ below IO-FAITH

3 Overapplication of nasal harmony in Johore Malay reduplication: irrefutable evidence for BR correspondence...if it's true

- Johore Malay has a process of rightward nasal spreading (Onn 1976:§2.3) that is claimed to interact in a complex way with reduplication (Onn 1976:180, Kenstowicz 1981).
- If it works the way that was originally claimed, there is no way to avoid positing BR correspondence or something equivalent.
- But there's some evidence that it doesn't actually work that way after all...

3.1 Nasalization

- Johore Malay has an allophonic distribution of nasalization on vowels and approximants (i.e. it lacks a nasalization contrast).

(39) a. Vowels and approximants (w, y, h, ʔ) are generally oral
b. Vowels immediately following a nasal stop or a nasalized approximant are nasalized
→ i.e., *iterative rightward nasal spreading blocked by consonantal segments*

⋆ Onn does not mark approximants as undergoers, but rather treats them as transparent. I'll assume (following McCarthy & Prince 1995:42) that they are undergoers.

(40) Distribution of nasalized vowels in Johore Malay (Onn 1976:69, 70)

'to drink'	mĩnõm	
'to eat'	mãkan	*mãk**ã**n, *m**a**kan
'to rise'	baŋõn	*b**ã**ŋõn, *baŋ**o**n
'to be luxurious'	mẽw̃ãh̃	(← /mewah/)
'supervision'	pəŋãw̃ãsan	(← /pəŋ-awas-an/)
'central focus'	pənə̃ŋãh̃ãn	(← /pəŋ-təŋah-an/)

- We can generate the distribution with the following constraints and ranking:

(41) a. *[+nas][-nas,-cons] (*NV): Assign a violation * for each non-nasal vowel or approximant which immediately follows a nasal(ized) segment.
b. *[+nas,-cons] (*Ṽ): Assign a violation * for each nasalized vowel or approximant.
c. **Ranking:** IDENT[±nas]/[+cons]-IO, *NV ≫ *Ṽ ≫ IDENT[±nas]/[-cons]-IO

- *NV ≫ *Ṽ ensures that nasalized vowels/approximants only appear in the post-nasal environment:

(42) Nasalization in Johore Malay (w/ maximally unfaithful input)

/makãn/	IDENT[±nas]/[+cons]-IO	*NV	*Ṽ	IDENT[±nas]/[-cons]-IO
a. makan		*!		*
b. ☞ mãkan			*	*
c. makãn		*!	*	
d. mãkãn			**!	*
e. bakan	*!			*

- Nasalization will spread throughout an entire approximant span, because stopping in the middle would only move the locus of the *NV violation, not get rid of it.

(43) Iterative nasal spreading in Johore Malay

/mewah/	IDENT[±nas]/[+cons]-IO	*NV	*Ṽ	IDENT[±nas]/[-cons]-IO
a. mewah		*!		
b. mẽwah		*!	*	*
c. ☞ mẽw̃ãh̃			****	****
d. bewah	*!			

3.2 Nasalization in reduplication

- If nasal spreading applied normally in reduplication, we would expect that nasal vowels/approximants should only appear when there is a nasal stop preceding the span to initiate spreading.

⇒ This appears *not* to be the case:

(44) Nasalization in Johore Malay reduplication (Onn 1976:180; McCarthy & Prince 1995:42)

a.	hamə̃	**h̃ã**mə̃-h̃ãmə̃	'germ/germs'
b.	waŋĩ	**w̃ã**ŋĩ-w̃ãŋĩ	'fragrant/(intensified)'
c.	aŋãn	**ã**ŋãn-ãŋãn	'reverie/ambition'
d.	aŋẽn	**ã**ŋẽn-ãŋẽn	'wind/unconfirmed news'

- The initial vowel (44c,d) or the initial approximant+vowel (44a,b) are nasalized despite not being preceded by a nasal stop.

⋆ **How does this nasalization come to be?** It would have to be some sort of overapplication.

- This is easily derived in BRCT with a high-ranked IDENT[±nas]-BR constraint:

(45) Overapplication of nasalization in Johore Malay reduplication

/RED, hamə/	IDENT[±nas]-BR	*NV	*Ṽ
a. hamə-hamə		*!* (mə, mə)	
b. hamə-hamə̃	*! (ə)	*! (mə)	*
c. hamə̃-hamə̃		*! (ə̃-h)	**
d. hamə̃-h̃ãmə̃	*!* (ha)		****
e. ☞ h̃ãmə̃-h̃ãmə̃			******

→ Unlike most other overapplication cases, this pattern **cannot** be derived using rule ordering or the like (McCarthy & Prince 1995:43ff.).

- A rule ordering account derives overapplication by ordering a phonological process before the copying rule, such that the result of the process is transferred to the reduplicant.
- In this case, the relevant process applies *across the juncture*, triggered by the content of the reduplicant.
  - i.e., the nasalization on the first two segments of the base is triggered by the presence of the [m] in the reduplicant.
- Therefore, copying must take place **before** the first two segments of the base are nasalized.
- But if copying has already taken place, the results of this nasalization can't be transferred back to the reduplicant, so there is no way to account for nasalization on the first two segments of the reduplicant.

(46) Attempting rule ordering (with persistent nasalization)

Input	/ RED-hamə /
Rule 1: Nasalization	RED-ham**ə̃**
Rule 2: Copy	**hamə̃**-hamə̃
Rule 3: Nasalization	hamə̃-**h̃ã**mə̃
Output:	[ha mə̃-h̃ãmə̃]

⇒ Therefore, if this data is correct, then the grammar must contain a mechanism like BR correspondence that ensures identity between base and reduplicant.

3.3 But...

- Kiparsky (2010) and others think the data isn't actually correct.

- In all of the examples that Onn provides for this pattern (44), the unexpected nasalized span immediately precedes a nasal. This leads Kiparsky (p.3) to say:

> "It is important to rule out the possibility that the putative back-copying nasalization is just a coarticulation effect due to the fact that the entire rest of the word is nasal. The crucial evidence will have to come from longer examples, which allow a bit more separation between the nasal and oral spans."

- So Kiparsky went out and did a little bit of mini-fieldwork. He constructed examples where the would-be over-nasalized span is separated from the trigger nasal by a blocker:

(47) a. (warna bajunya) ke-*hitam-hitam*-an
'(the color of the dress) is blackish'

b. (taman bunganya terasa) ke-*harum-harum*-an
'(the garden terrace) is full of fragrance'

- In examples like these, predictions of the two interpretations diverge:
  - Back-copying predicts nasalization on the initial span, because of its presence in the base.
  - "Coarticulation" predicts that there should not be nasalization on the initial span, because it is not immediately followed by a nasal.

(48) Predictions

Back-copying	vs.	Coarticulation
kə-**h̃ĩ**tam-h̃ĩtam-ãn	vs.	kə-**hi**tam-h̃ĩtam-ãn
kə-**h̃ã**rum-h̃ãrum-ãn	vs.	kə-**ha**rum-h̃ãrum-ãn

- Kiparsky (p. 4) says:

> "I heard no nasality in this part of the words in the speech of any of the informants, however. Therefore, until solid phonetic evidence is produced I will assume that the report of back-copying in Malay is erroneous, conceivably due to the interpretation of phonetic coarticulation as phonological back-copying."

- This isn't enough information for me to be completely convinced.
  - He doesn't give transcriptions of the elicited forms. Crucially, he doesn't say anything about whether nasalization is working as expected in the rest of the word.
  - It appears as though [h] is not generally allowed following a nasal (or any consonant, for that matter). So it's not obvious that nasalization should be expected to spread onto the base.
- What we actually need are examples like these that have a vowel following the nasal:
  - $\sqrt{}$HVCVNV → HVCVNV-HVCVNV (e.g. hitama), or
  - $\sqrt{}$VCVN → VCVN-VCVN (e.g. arum)

- Also, "coarticulation" is a strange claim here, since it would have to be extending through two segments, not just one.

> - One might think that it is actually emergent leftward nasal spreading in reduplication, but I don't think this actually works.
>   - IDENT[±nas]/[-cons]-IO $\gg$ *VN $\gg$ IDENT[±nas]/[-cons]-BR
>   - But since we already know that *Ṽ $\gg$ IDENT[±nas]/[-cons]-IO, then by transitivity *Ṽ $\gg$ *VN.
> - This ranking would rule out leftward nasal spreading.

- Until we know how examples like these work, and we have more systematic fieldwork, this remains an open question.

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