Class 1
Introduction to Reduplicant Shape

4/4/2023

1 Introduction

Reduplication: a class of processes where the phonological exponent of a morphological category is formed by "copying" material from a different portion of the phonological output.

⇒ The phonological material indicating the category co-varies with the phonological material of the particular base it attaches to, rather than being fixed across bases.

- For example, Diyari makes diminutives by prefixing a copy of (roughly) the first two syllables of the base:

(1) Diyari diminutive reduplication (Austin 1981:64)

a.	2σ	*pirta*	'tree'	→	*pirta-pirta*	'small tree'
b.	3σ	*kinthala*	'dog'	→	*kintha-kinthala*	'little dog, puppy'
c.	4σ	*wilhapina*	'old woman'	→	*wilha-wilhapina*	'little old woman'

- **Terminology:**
  - *Reduplicant*: The "copy", i.e. the portion of the output word which consistently depends on the phonological properties of the rest of the word. (Usually indicated by underlining.)
  - *Base*: The portion of the output word which the reduplicant copies (basically, everything which isn't the reduplicant).

- It's not always possible to be sure which string is the reduplicant and which is the base.
  - In cases of total reduplication especially, the distinction often doesn't matter.
- It is often a matter of analysis which part is identified as the reduplicant.
  - The distinction is more significant in some theories (e.g. Base-Reduplicant Correspondence Theory; McCarthy & Prince 1995, 1999) than others (e.g. Morphological Doubling Theory; Inkelas & Zoll 2005).

- **Two big questions for the quarter:**
  1. There is systematic variation (cross-linguistically and intra-linguistically) in the shapes of reduplicants. *What considerations go into determining reduplicant shape?*
  2. Phonological processes/distributions frequently do not apply transparently in reduplicated words. *What theoretical machinery is required to accurately and restrictively describe the set of attested non-transparent reduplication-phonology interactions?*

2 Basic dimensions of variation in reduplicant shape

2.1 Total reduplication vs. partial reduplication

1. *Total reduplication*: an entire word (or morphological constituent) is copied; e.g. **Indonesian** (2).

- The two parts often act like independent words, or like the two members of a compound.
- The two parts usually look completely identical to corresponding unreduplicated word in isolation (≈ the "reduplicant" is a fully faithful duplicate of the base).

- Total reduplication patterns often don't show much interesting phonology. But,
  - Javanese total reduplication (Dudas 1976) is important for understanding "over-application" and "under-application" opacity in reduplication and how phonology interacts with reduplication generally.
  - Indonesian shows interesting interactions between stress/accent and reduplication:

(2) Plural reduplication in Indonesian (McCarthy & Cohn 1998:32, 52; cf. Cohn 1989:185)

	indefinite		*definite*	
a.	<u>búku</u>-búku	'books'	<u>bùku</u>-bukú-ña	'the books'
b.	<u>waníta</u>-waníta	'women'	<u>wanìta</u>-wanitá-an	'womanly' (adj.)
c.	<u>màsarákat</u>-màsarákat	'societies'	<u>màsaràkat</u>-màsarakát-ña	'the societies'
d.	<u>minúm(-)an</u>-minúm-an	'drinks'	<u>minùm(-)an</u>-mìnum-án-ña	'the drinks'

- In the indefinite, where the reduplicated word is unsuffixed (or the two members contain the same suffixes), both members bear primary stress.
- In the definite, where the reduplicated word is suffixed, the first member now gets a secondary stress instead.

- Some people have interpreted this to be an effect of *identity* between base and reduplicant (Kenstowicz 1995, McCarthy & Cohn 1998, Stanton & Zukoff 2016); others have attributed it to more general properties of the morphological system of the language (Inkelas & Zoll 2005:§4.3).
  ⇒ The question of what aspects of reduplication belong to morphology and which belong to phonology is one of the major issues we'll be concerned with.

2. *Partial reduplication*: the reduplicant "copies" a phonological substring from the base; morphological constituency is (usually) ignored.

- The copied substring may coincide with a constituent in some forms, but this is accidental.

- For example, Diyari partial reduplication copies two syllables.
  - When the root is two syllables (1a), it looks like the whole root is being copied.
  - But when the root is longer (1b,c), we see that the process is not actually targeting the root.

- Partial reduplication frequently displays phonological restrictions which do not hold of other parts of the language's phonology.
  - This (virtually) always goes in the direction of having *less marked* structures in the reduplicant than elsewhere — *the emergence of the unmarked* (TETU; McCarthy & Prince 1994a).
  - I'll argue that the disyllabic shape of the reduplicant in languages like Diyari is an instance of TETU, in that such a shape is optimal for the language's stress pattern.

2.2 Number of syllables/moras that get copied

1. *1 syllable*; e.g. **Sanskrit** (3)
2. *2 syllables*; e.g. **Diyari** (1)/(4)
3. *Variable* yet predictable; e.g. **Ponapean** (5): varies predictably between 1 and 2 moras

- Sanskrit perfect tense reduplication always copies a CV syllable from the left edge

(3) Sanskrit perfect reduplication (Whitney 1885, Steriade 1988)

a.	√*dar-*	'pierce'	→	*da-dā́r-a*	'I have pierced'
b.	√*beud^h-*	'wake'	→	*bu-bud^h-úr*	'They have woken'
c.	√*paiṣ-*	'crush'	→	*pi-piṣ-úr*	'They have crushed'

- Diyari diminutive reduplication always copies the first two syllables from the left edge

(4) Diyari diminutive reduplication (Austin 1981:38, 64)

a.	2σ	*pirta*	'tree'	→	*pirta-pirta*	
b.	3σ	*kinthala*	'dog'	→	*kintha-kinthala*	
c.	3σ	*tyilparku*	bird type	→	*tyilpa-tyilparku*	(**tyilpa**r**-tyilparku*)
d.	3σ	*ngankanthi*	'cat fish'	→	*nganka-ngankanthi*	(**ngankan-ngankanthi*)
e.	4σ	*wilhapina*	'old woman'	→	*wilha-wilhapina*	

- Ponapean copies *one or two* moras from the left edge, depending on properties of the base

(5) Ponapean reduplication (Kennedy 2002:225)

	1-mora stem	2-mora stem	3-mora stem	4-mora stem
2-mora reduplicant	pàa-pá tèpi-tép dòn-dód	duǹ-duné sipì-sipéd diǹ-dilíp	dùu-dùupék mèe-mèelél lìi-lì.aán	rìi-ri.àalá
1-mora reduplicant		dù-duúp		tò-toòroór sò-soùpisék

→ No language consistently copies three syllables/moras. This is probably related to facts about prosodic structure. (More on this next time.)

2.3 Conditions on codas/syllable weight

1. Syllable has to be *light/open*; e.g. **Sanskrit** perfect reduplication (3), second syllable in **Diyari** (4c,d)
2. Syllable has to be *heavy/closed*; e.g. **Ilokano** (6)

- One of the reduplication patterns in Ilokano consistently has a heavy syllable in the reduplicant.
  - If the first syllable of the base is heavy (6a), copy the first syllable of the base as is.
  - If the first syllable of the base is open (6b–d), copy the first syllable + the first following onset consonant (and parse the copy as a coda).
  - If the first syllable of the base is open and followed by a [ʔ] (6e,f), copy the first syllable and lengthen the vowel.

(6) Heavy σ reduplication in Ilokano (McCarthy & Prince 1986:3,10; Hayes & Abad 1989)

a.	/takder/	→	ʔag-<u>tak</u>-tak.der	'be standing'
b.	/basa/	→	ʔag-<u>bas</u>-ba.sa	'be reading'
c.	/adal/	→	ʔag-<u>ad</u>-a.dal	'be studying'
d.	/trabaho/	→	ʔag-<u>trab</u>-tra.ba.ho	'be working'
e.	/da(ʔ)it/	→	ʔag-<u>daː</u>-da.ʔit	'be studying'
f.	/ro(ʔ)ot/	→	ʔag-<u>roː</u>-ro.ʔot	'be leaving'

2.4 Position of reduplicant

1. *Prefix*: all the partial reduplication we've seen so far
2. *Suffix*: e.g. **Manam** (7)
   → (though this could alternatively be analyzed as being infixed before the stressed syllable; many suffixal patterns are like this, especially those with "foot" reduplicants)
3. *Infix*: e.g. **Mangarayi** (8)
   → Many patterns involving infixation are probably characterizable as one of the next two
4. *Variable* (yet phonologically predictable): e.g. **Sanskrit** desiderative (9) — oriented to the left, but can be infixed for phonotactic reasons
5. *Adjacent to stress*: e.g. **Samoan** (10) — "prefixed" to the stressed syllable

- Manam suffixal reduplication: copies the final two moras (= bimoraic foot)

(7) Manam (Lichtenberk 1983)

salága	→	salaga-<u>lága</u>	'be long' / 'long (sg.)'
mo.íta	→	mo.ita.-<u>íta</u>	'knife' / 'cone shell'
malabóŋ	→	malabom-<u>bóŋ</u>	'flying fox'
ʔulan-	→	ʔulan-<u>láŋ</u>	'desire' / 'desirable'

- Mangarayi infixal reduplication: reduplicant infixed after initial C, copies following VC*

(8) Mangarayi plural reduplication (McCarthy & Prince 1986:36; Merlan 1982)

	Singular	Plural	
a.	gabuji	**g**-<u>ab</u>-**abuji**	'old person'
b.	yirag	**y**-<u>ir</u>-**irag**	'father'
c.	jimgan	**j**-<u>img</u>-**imgan**	'knowledgeable one'
d.	waŋgij	**w**-<u>aŋg</u>-**aŋgij**	'child'
e.	muygji	**m**-<u>uygj</u>-**uygji**	'having a dog'

- Sanskrit desiderative reduplication: CV reduplicant is
  - prefixed for C-initial roots, but
  - infixed past the initial V or VC for V-initial roots for phonotactic reasons (Zukoff 2017a:§6.6.2)

(9) Classical Sanskrit desiderative (Whitney 1885)

	Root shape	Root		Desiderative	
a.	CCV	√tvar	‘hasten’	ti-tvar-iṣa-	
		√stamb^{h}	‘prop’	ti-stamb^{h}-iṣa-	
b.	VC	√aɟ	‘drive’	a-ɟi-ɟ-iṣa-	not *aɟ-aɟ-iṣa-
		√īḍ	‘praise’	ī-ḍi-ḍ-iṣa-	not *īḍ-īḍ-iṣa-
c.	VCC	√arc	‘praise’	ar-ci-c-iṣa-	not *a-ri-rc-iṣa-
		√ubɟ	‘force’	ub-ɟi-ɟ-iṣa-	not *u-bi-bɟ-iṣa-
		√aɲɟ	‘anoint’	aɲ-ɟi-ɟ-iṣa-	not *a-ɲi-ɲɟ-iṣa-

- Samoan reduplication: CV reduplicant copies and precedes the stressed syllable.
  - Stress is on the penultimate mora (moraic trochees from the right).
  - When the word is only bimoraic, the reduplicant appears as a true prefix (10a,b).
  - When the word is longer, the reduplicant ends up as an infix (10c).

(10) Samoan reduplication (Broselow & McCarthy 1983:30)

a.	táa	ta-táa	‘strike’
	túu	tu-túu	‘stand’
b.	nófo	no-nófo	‘sit’
	mó.e	mo-mó.e	‘sleep’
c.	alófa	a-lo-lófa	‘love’
	saváli	sa-va-váli	‘walk’
	malí.u	ma-li-lí.u	‘die’

2.5 Is the reduplicant a faithful copy of the base, or is it less marked?

- a.k.a. *The Emergence of the Unmarked* (TETU; McCarthy & Prince 1994a)

1. Faithful (no TETU)

  - **Diyari** — everything it copies it copies faithfully
  - **Ilokano** — everything it copies it copies faithfully, other than vowel length alternation in forms like *ʔag-daː-daʔit* (which is not about markedness reduction)

2. Faithful but reduced (phonotactic TETU)

  - **Sanskrit** cluster-initial roots copy without one of the consonants (9a)

3. Unfaithful due to process application (no TETU)

  - **Ponapean** forms like *dòn-dód* (*d* → *n* via independent coda condition effect)

4. Unfaithfulness due to featural TETU

- **Yoruba** (11) only allows the "least marked" vowel [i] in the reduplicant, regardless of base vowel:

(11) Yoruba (from Alderete et al. 1999:337)

gbóná	→	gbí-gbóná	'be warm, hot'/'warmth, heat'
jɛ	→	jí-jɛ	'eat'/'act of eating'
rí	→	rí-rí	'see'/'act of seeing'

3 Analyzing Reduplicant Shape

3.1 Marantz (1982): CV templates

- Marantz (1982) was one of the first proposals designed to explain the mechanisms that determine the shape of reduplication. His approach was to employ "reduplicative templates".
  - The shape of the reduplicative morpheme was specified in underlying representation, in terms of a consonant-vowel (CV) template, i.e. a specified string of C slots and V slots.
  - It then received its phonological content through copying and autosegmental association to the CV slots of that template (see also Steriade 1988).

→ Associate leftmost segment of copy to first matching segment type; keep associating left-to-right until you run out of C/V slots.

(12) CVC reduplication in Agta (Marantz 1982:439,487; data from Healey 1960:7)

a. *takki* 'leg' → *tak-takki* 'legs'

t	a	k	k	i		t	a	k	k	i
|	|	|				|	|	|	|	|
C	V	C			+	C	V	C	C	V

b. *ufu* 'thigh' → *uf-uffu* 'thighs'

	u	f	f	u		u	f	f	u
	|	|				|	|	|	|
C	V	C			+	V	C	C	V

- Levin (1983, 1985) replaces C's and V's with X's (i.e. any segment).

3.2 McCarthy & Prince (1986): Prosodic Templates

- McCarthy & Prince (1986) observe that reduplicant shape tends to be describable as something like a syllable, or a heavy syllable, or a foot. (See also Hyman 1985.)

- They proposed that reduplicant shape should be **underlyingly specified** as a member of the prosodic hierarchy, possibly with conditions on that category (e.g. binarity for feet, heaviness for syllables).
  - The empty prosodic category is then filled through autosegmental association as in the prior approaches.

(13) Prosodic Categories (McCarthy & Prince 1986:6)

Wd	'prosodic word'
F	'foot'
σ	'syllable'
σ_μ	'light (monomoraic) syllable'
$\sigma_{\mu\mu}$	'heavy (bimoraic) syllable'
σ_c	'core syllable' [= (C)V]

- Ilokano has a heavy syllable template: $/\sigma_{\mu\mu}/$
  → Starting from the leftmost segment of the base, copy as much as you need in order to get exactly one heavy syllable in the reduplicant (coda consonants are moraic).

(14) Heavy σ reduplication in Ilokano (McCarthy & Prince 1986:3,10; Hayes & Abad 1989)

a.	/basa/	→	ag-bas-basa	'be reading'
b.	/adal/	→	**ag-ad-adal**	'be studying'
c.	/takder/	→	ag-tak-takder	'be standing'
d.	/trabaho/	→	ag-trab-trabaho	'be working'
e.	/da(ʔ)it/	→	ag-daː-daʔit	'be studying'
f.	/ro(ʔ)ot/	→	ag-roː-roʔot	'be leaving'

- This analysis works perfectly for (14a,c,d).
  - The complex onset in (14d) shows why we don't want to use C/V/X slots:
    - A CVC template wouldn't fit both consonants.
    - A CCVC template would almost always go unsatisfied.
  - (14a,d) show that this condition ignores the syllabification of the base: onset consonant copied as coda.

- (14e,f) explained by fact that glottal stops can't be preconsonantal in the language.
  - Heavy syllable has to be achieved in other way: copy the vowel and lengthen it.

∗ Other options not taken:
  - Copy the base *i* as second member of diphthong: *[dai-daʔit] — not allowed because language doesn't allow (or at least doesn't like?) diphthongs.
  - Copy the base *(ʔ)i*, but don't incorporate it into the first syllable: *[da.(ʔ)i-daʔit] — not allowed because it copies a second syllable. (Not copying/ epenthesizing ʔ would create hiatus, which is banned.)
  - Copy the root-final consonant: *[rot-roʔot] — not allowed because it copies a discontiguous string.
    - Languages do allow discontiguous copying; e.g. Sanskrit TRV... roots in (9).
    - This exact pattern found in a dialect of Malay Somerday (2015).

∗ There's a problem with (14b) [a.g-a.d-a.dal], if we assume transparent syllabification.
  - Because the base is vowel initial, normal syllabification would make copied consonant an onset, and thus not make the reduplicant a heavy syllable (reduplicant would be part of two syllables).
  - To maintain analysis, you either need to posit intermediate level of structure where the copied consonant actually is a coda, or posit that surface syllabification respects morpheme boundaries.

- Manam is treated as having a bimoraic foot template:
  - If you can get a bimoraic foot by copying one syllable (where codas add a mora), do it (15c,d)
  - If not, copy a second syllable (15a,b)

(15) Manam (Lichtenberk 1983)

salága	→	salaga-lága	'be long' / 'long (sg.)'
moíta	→	moita-íta	'knife' / 'cone shell'
malabóŋ	→	malabom-bóŋ	'flying fox'
ʔulan-	→	ʔulan-láŋ	'desire' / 'desirable'

3.3 Prosodic Template Constraints

- In OT, template form was transferred from underlying representation to constraints (McCarthy & Prince 1993b, 1994a,b, 1995, *et seq.*).
  - Rather than the reduplicant having specified UR, the UR is contentless: /RED/
  - A violable constraint specified the preferred reduplicant shape: for example, RED = SYLLABLE (σ), or RED = FOOT (*ft*)
  - Additional constraints on the shapes of syllables and feet, and other phonotactics, could then too play a direct role in determining the ultimate surface shapes of reduplicants.

- M&P usually frame RED = X as Alignment constraint (McCarthy & Prince 1993a), aligning the edges of the reduplicative morpheme to edges of prosodic constituents.
  - E.g., Manam: RED = FOOT ⇒ ALIGN(RED, L/R; FT, L/R) (+ FOOTBIN to ensure bimoraic foot)

3.4 Base-Reduplicant Correspondence Theory

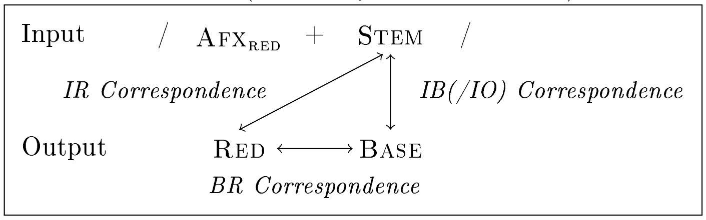
- McCarthy & Prince (1995, 1999) couch this constraint-based approach within Base-Reduplicant Correspondence Theory (BRCT).

- In the original proposal, two models are considered: the "basic model" (16), where there are two distinct correspondence relations; and the "full model" (17), where there are three.
  1. The input root and the output root/base are related via Input-Output (Input-Base) correspondence.
  2. **The output base and the output reduplicant are related via Base-Reduplicant Correspondence.**
  3. The input root and the output reduplicant are related via Input-Reduplicant correspondence **(full model only)**

(16) BRCT "Basic Model" (McCarthy & Prince 1995:4)

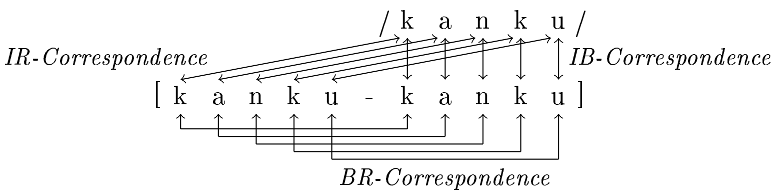
$$\begin{tikzcd} \text{Input} & / \ \textsc{Afx}_{\textsc{red}} + & \textsc{Stem} \ / \arrow[d, leftrightarrow, "\textit{IB(/IO) Correspondence}"] \\ \text{Output} & \textsc{Red} \arrow[r, leftrightarrow, "\textit{BR Correspondence}"'] & \textsc{Base} \end{tikzcd}$$

(17) BRCT "Full Model" (McCarthy & Prince 1995:4)



(18) Illustration of the full model (Diyari *kanku-kanku*, Austin 1981:39)

[diagram taken from Stanton & Zukoff 2016]



- All of these correspondence relations have the same faithfulness constraints, just defined over different relations. For example, faithfulness constraints over the BR relation include:

(19) a. **MAX-BR**:
Assign a violation * for each segment in the base without a correspondent in the reduplicant.

b. **DEP-BR**:
Assign a violation * for each segment in the reduplicant without a correspondent in the base.

c. **IDENT[F]-BR**:
Assign a violation * for each pair of segments standing in BR correspondence which differ on feature F.

→ Base ≈ Input; Reduplicant ≈ Output

- Templatic constraints conflict with these (especially MAX-BR).
  - ○ If there is a constraint RED = FOOT, but the base contains more than a foot, both constraints can't be fully satisfied simultaneously.
  - → In this approach, a templatic reduplication pattern is one where RED = X ≫ MAX-BR.
  - ○ Total reduplication patterns might be thought of as systems where MAX-BR dominates all possible templatic constraints.

⋆ Some recent theories have returned to the idea of underlying templates (rather than templatic constraints) in OT-based frameworks:
  - ○ Saba Kirchner (2010, 2013) "Minimal Reduplication":
    - ▪ Reduplicative morphemes have underlying representation consisting of prosodic structure not specified for segmental composition.
    - ▪ No BR-correspondence, but otherwise uses parallel OT (actually Stratal OT, though you need to read carefully).
  - ○ McCarthy, Kimper, & Mullin (2012) "Serial Template Satisfaction" in Harmonic Serialism:
    - ▪ Same deal, but with Harmonic Serialism (OT with serial derivation).

3.5 Generalized Template Theory

- Selection of a particular prosodic template for reduplication in a language is not fully arbitrary:

> "*It is a stable empirical finding that templates imitate – up to extrametricality – the prosodic structure of the language at hand.*" (McCarthy & Prince 1986:4)
>
> "*The fact that the templates are bounded by a language's prosody follows from their being literally built from that prosody.*" (McCarthy & Prince 1986:5)

- In an ideal world, we could **derive** the nature of the template from **independent** constraints or other independent facts about the grammar.
  → This line of research is commonly referred to as "Generalized Template Theory" (GTT).

- But this usually got implemented in kind of a weird way (see McCarthy & Prince 1994a,b, 1995, Urbanczyk 1996, 2001):
  - You define the reduplicative morpheme as a particular class of morpheme: affix, root, stem
  - You define a size condition on that class of morphemes: e.g. AFFIX $\leq \sigma$, STEM = PRWD
    - Syllable-sized reduplicants are affixes (i.e. RED = σ is really just AFFIX $\leq \sigma$)
    - Foot-sized reduplicants are stems: RED = FOOT is really just STEM = PRWD, and prosodic words must have a head foot

- This approach transfers phonological stipulation to morphological stipulation (or generalization, if you prefer).

3.6 The A-templatic Approach

- A stronger version of GTT is "a-templatic" reduplication (Spaelti 1997, Gafos 1998, Hendricks 1999, Riggle 2006, *a.o.*):

> ⋆ There are no templatic constraints or templatic URs.
> ⋆ Reduplicant shape is determined solely through the interaction of independently necessary constraints (mainly markedness constraints).
> ⋆ Partial reduplication is inherently **minimal**, subject to extension by other constraints.

- In this approach, there are essentially two types of reduplication, determined by the relative ranking of two constraints:

(20) a. Total reduplication: MAX-BR $\gg$ *size restrictor*
b. Partial reduplication: *size restrictor* $\gg$ MAX-BR

- "Size restrictors" / "size minimizers" are constraints (of various sorts) that, in effect, penalize the *presence* of material in the reduplicant.

(21) Some proposed size restrictor constraints

a.	*STRUC(TURE)-SEG/σ	(Riggle 2006; cf. Zoll 1994)
b.	ALL-FEET/σ-L/R	(McCarthy & Prince 1994b, Spaelti 1997, *a.o.*)
c.	ALIGN-ROOT-L/R	(Hendricks 1999, Zukoff 2017a,b, *a.o.*; cf. Riggle 2006)
d.	INTEGRITY-IO	(Spaelti 1997; cf. Riggle 2006, Saba Kirchner 2010, 2013)
e.	DEP(Seg)-BD/OO	(Gouskova 2004)

- When MAX-BR outranks all size restrictors (20a), you copy everything.
- When a size restrictor outranks MAX-BR (20b), you copy *as little as possible*.

- The fact that not all partial reduplication patterns are minimal (≈ CV) results from other constraints that penalize the minimal shape outranking the size restrictor in ranking (20b).
  - i.e., extension to a longer reduplicant can only be motivated by the presence of higher-ranked conflicting constraints: e.g. prosodic constraints like *CLASH, segmental phonotactics like OCP.
  - The diversity of partial reduplication patterns is due to the diversity of possible conflicting constraints, and their interactions.

⋆ Put another way: **reduplicant shape is determined primarily by TETU.**

3.7 A sketch analysis of a-templatic reduplication in Gothic

- Gothic (Zukoff 2017a:Ch. 4) represents a clear case of minimal reduplication, with conditional extension.
  - It has prefixal partial reduplication which is by default CV.
  - When a particular phonotactic constraint would be violated by CV, it exhibits a longer reduplicant (namely, CCV).

- For roots beginning in *consonant+vowel* (C_1V), the reduplicant is $\underline{C_1ɛ}$-.
- For roots beginning in *consonant+**sonorant**+vowel* (C_1R_2V), the reduplicant is also $\underline{C_1ɛ}$- (22a).
- But, for roots beginning in *consonant+**obstruent**+vowel* (C_1T_2V), the red. is extended to $\underline{C_1T_2ɛ}$- (22b).

(22) Cluster-initial reduplicated form in Gothic (Lambdin 2006:115)

		Present (1SG)		Preterite (1SG)		
a. **CRV roots**	'tempt'	*fraisa*	[frɛːs-a]	*faifrais*	[fɛ-frɛːs]	
	'sleep'	*slepa*	[sleːp-a]	*saislep*	[sɛ-sleːp]	
	'bewail'	*floka*	[floːk-a]	*faiflok*	[fɛ-floːk]	
	'weep'	*greta*	[greːt-a]	*gaigrot*	[gɛ-groːt]	
b. **CTV roots**	'possess'	*stalda*	[stald-a]	*staistald*	[stɛ-stald]	(not *[sɛ-stald])
	'divide'	*skaida*	[skɛːð-a]	*skaiskaiþ*	[skɛ-skɛːθ]	(not *[sɛ-skɛːθ])

- This is clearly a partial reduplication pattern, since not everything is copied. This means we need the ranking schema *size restrictor* ≫ MAX-BR (20b).
  - I'll use ALIGN-ROOT-L as the size restrictor:

(23) **ALIGN-ROOT-L:** Assign one violation * for each segment intervening between the left edge of the root and the left edge of the word.

- Under certain approaches to morpheme ordering / linearization, ALIGNMENT constraints of this sort are independently necessary to determine the relative order of morphemes in a word (McCarthy & Prince 1993a, Zukoff 2022).

- This ranking fragment alone will select desired candidate (24a) over (24b,c), because it has fewer segments in the reduplicant (2 vs. 3,4).

(24) CV reduplicants for #CR clusters: √*floːk* → *fɛ-floːk* 'he wept'

/RED, floːk/	ANCHOR-L-BR	ALIGN-ROOT-L	MAX-BR	CONTIGUITY-BR
a. ☞ $\underline{f_i ɛ_k}$-$f_i l o ː_k k_l$		**	**	*
b. $\underline{f_i l_j ɛ_k}$-$f_i l_j o ː_k k_l$		***!	*	
c. $\underline{f_i l_j ɛ_k k_l}$-$f_i l_j o ː_k k_l$		***!*		
d. $\underline{ɛ_k}$-$floː_k k_l$	*!	*	***	
e. $\underline{l_j ɛ_k}$-$f l_j o ː_k k_l$	*!	**	**	

- To ensure that (24a) wins over (24d,e), we need the BR-faithfulness constraint Anchor-L-BR to outrank Align-Root-L (and also another BR-faithfulness constraint Contiguity-BR).

(25) a. **Anchor-L-BR:** Assign one violation * if the segment at the left edge of the reduplicant does not stand in BR correspondence with the segment at the left edge of the base.
b. **Contiguity-BR:** Assign one violation * for each pair of adjacent segments in the reduplicant which are not adjacent in the base.

- With respect to Align-Root-L, (24a) fares worse than (24d) and identically to (24e).

→ So we know that a constraint(s) that penalize (24d) & (24e) worse than (24a) must outrank Align-Root-L.
  - Both (24d) & (24e) violate Anchor-L-BR, because the leftmost segment of the reduplicant does not match the leftmost segment of the base.
- (24a) avoid the Anchor-L-BR violation while still copying (almost) minimally by skipping the second base consonant, which incurs a Contiguity-BR violation.
  - As long as Anchor-L-BR ≫ Contiguity-BR, we derive the right result.
  - Align-Root-L must also dominate Contiguity-BR, so that (24a) can still win over (24b), which avoids the Contiguity-BR violation at the expense of copying an extra segment.

- The basic case thus illustrates minimal copying subject to higher ranked constraints (here, Anchor-L-BR).
- In #CTV roots, non-minimal copying is motivated by a phonotactic constraint against particular types of consonant repetitions:

(26) **$*C_\alpha VC_\alpha$ / _$C_{[-\text{sonorant}]}$:**
For each sequence of repeated identical consonants separated by a vowel ($C_\alpha VC_\alpha$), assign a violation * if that sequence immediately precedes an obstruent.

  - I call this constraint "No Poorly-Cued Repetitions (*PCR)" in Zukoff (2017a), where I argue that it has phonetic underpinnings.
  - This constraint is crucial for explaining a variety of similar effects in the reduplication patterns of a number of ancient Indo-European languages, and elsewhere.

- The context for this constraint is met only by the minimal copying candidate for #CTV roots, not #CV or #CRV roots.

⇒ Therefore, diversion away from the basic pattern (27a) is called for only for #CTV roots.
  - The ranking Anchor-L-BR ≫ Align-Root-L, which was independently established for the #CRV roots, means that the optimal alternative is (27b), which copies an extra segment.

(27) CCV reduplicants for #CT clusters: $\sqrt{}$*stald* → *<u>ste</u>stald* 'he possessed'

/RED, stald/	Anchor-L-BR	$*C_\alpha VC_\alpha$ / _$C_{[-\text{son}]}$	Align-Root-L	Max-BR
a. $\underline{s_i\varepsilon_k}$-$s_i ta_k ld$		*!	**	***
b. ☞ $\underline{s_i t_j\varepsilon_k}$-$s_i t_j a_k ld$			***	**
c. $\underline{t_j\varepsilon_k}$-$st_j a_k ld$	*!		**	***

(28) Total ranking:
Anchor-L-BR, $*C_\alpha VC_\alpha$ / _$C_{[-\text{son}]}$ ≫ Align-Root-L ≫ Max-BR, Contiguity-BR

⋆ **Moral of the story:** Partial reduplication is minimal, unless high ranking constraints interfere with satisfaction of the size restrictor constraint.

- Next time we'll see how prosodic constraints can also induce extra copying and explain certain effects formerly attributed to "prosodic templates".

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