Class 9
Minimal Reduplication (Saba Kirchner 2010, 2013) and Kwakwala

11/16/17

1 Minimal Reduplication

- Saba Kirchner (2010, 2013) proposes a "new" theory of reduplication: "Minimal Reduplication".

Basics of the theory: Reduplication actually isn't anything special; there should be no special mechanisms in the grammar that are unique to reduplication.

- Main thing: there's no such thing as a RED morpheme.
  - It would be nice to eliminate this, as it certainly is specific to reduplication and comes out of nowhere from the point of view of the rest of the grammar.
  - Getting rid of it would bring us closer to homology between the input and the output (the input doesn't contain things which necessarily are not part of the output, and vice versa).
- He argues that we should replace underlying RED with (un(der)specified/partially specified) prosodic categories, e.g. μ, σ, $\sigma_{\mu\mu}$, [iː]$_\sigma$, etc.
    - Impressionistically/aesthetically, floating moras don't seem like a weird thing to me.
    - But floating syllables, especially ones that are specified for moraic content, seem super weird to me.
  - This is basically a return to prosodic templates (à la McCarthy & Prince 1986), but with a clearer idea of how to implement template satisfaction:
    - Faithfulness to the elements of the input coupled with constraints enforcing (non-vacuous) docking of "floating" material.
  - Kwakwala is a case where sometimes the floating elements can be realized non-vacuously on the root (thus no "reduplication") but other times they can't, so reduplication happens in order to host it.

⋆ I think that the intuition behind this can be implemented equally well if not better without specifying prosodic structures in the input, but simply through requirements of morpheme realization (Kurisu 2001).

- I'll sketch that out at the end.

- Tangential claim: He also claims that there shouldn't be any BR correspondence.
  - He mainly makes this move for philosophical reasons (and because he doesn't need it for the patterns he's focused on):
    - He thinks BR correspondence counts as a "special mechanism" unique to reduplication, so it should be done away with.
  - But the idea of surface correspondence isn't remotely unique to reduplication.
    - Struijke (2002) posits that BR correspondence is just a special (i.e. morphologically defined) case of general surface correspondence between outputs corresponding to the same input (see also Stanton & Zukoff 2016); correspondence is determined by structural relations.

    - Stanton & Zukoff (2017) (following Kitto & de Lacy 1999) posit that correspondence holds generally between epenthetic vowels and some surface host.
    - Zuraw (2002) argues that there's a drive for similar output sequences to be put into surface correspondence, which is how to explain "aggressive reduplication" patterns (e.g. *orangutan* → *orangutang*, *pompon* → *pompom*, etc.).
    - "Agreement By Correspondence" (Rose & Walker 2004, *et seq.*) takes this even further and uses surface correspondence to explain assimilation and dissimilation patterns more generally.
  - So it's not necessary to do away with BR correspondence on the grounds that it's some special mechanism.
    - It would be justifiable to get rid of it on empirical grounds if it turns out to make bad predictions elsewhere, but this question is orthogonal to Saba Kirchner's actual proposal.

- He also basically adopts existential faithfulness (implicitly, and maybe unknowingly, in 2010; explicitly in 2013).

2 Saba Kirchner on Kwakwala

NB: *Some of the data in Saba Kirchner (2010, 2013) and Struijke (2002), including about the composition of reduplicants and bases, seems to be inconsistent with the data from Kalmar (2003), which appears to be the most recent extensive fieldwork.*

- *Besides these questions of shape, Kalmar also differs in that she claims that there actually isn't a vowel length distinction, though maybe stressed vowels get lengthened slightly.*
- *This has big ramifications for the stuff we looked at last time, where weight and stress determined where consonants and long vowels end up in reduplicated forms.*
- *There's also significant disagreement about where the stresses are (even more than I realized before).*
- *So a lot of the stuff I say (and have said) about Kwakwala needs to be seen as preliminary.*

- According to Saba Kirchner (abbrev. SK), the underlying representation of the suffix(es) for *mut* forms is:

(1) UR: /μ -muːt/ (a floating mora plus the segmental suffix)

- Rather than generating reduplication via an inherent requirement for reduplication (i.e. an underlying RED morpheme and/or some constraint penalizing the absence of reduplication in the output), this derives reduplication as a repair strategy to host the floating mora when it cannot dock on the root for independent reasons (namely, when it would create a superheavy syllable).

- The rationale behind this approach is seen most clearly in CəO roots (≈ underlyingly monomoraic roots).
  - For SK, these represent the basic case, whereas for Struijke they were the complicated case.
  - These roots exhibit lengthening (according to SK's interpretation; but not Struijke's, or Kalmar's), without reduplication (that part Struijke at least agrees on).
  - According to SK, this is because this is the preferred way to realize the suffix, and these roots can do so without creating a superheavy syllable.

(2) Behavior of CəO roots

	Struijke (2002:65)		Saba Kirchner (2010)		
	Root	*mut* form	Root	*mut* form	Gloss
a.	ʔax	ʔax-m'úːt	ʔəx	ʔaːx-m'úːt	'waste left after some work'
b.	q'əx	q'ax-m'úːt	q'əx	q'aːx-m'úːt	'piece bitten out'
c.	ʔaχ^{w}	ʔaχ^{w}-m'úːt	ʔəχ^{w}	ʔaːχ^{w}-m'úːt	'waste scum'
d.	ʦ'əx	ʦ'ax-m'úːt	ʦ'əx	ʦ'aːx-m'úːt	'hair singed off'
e.	y'əx^{w}	y'ax^{w}-m'úːt	y'əx^{w}	y'aːx^{w}-m'úːt	'high water mark'

- The floating mora has to be realized somewhere in the output, and this realization has to have a non-vacuous effect (NoVacDoc(μ)).
  - Since this can be done without creating a superheavy syllable, the reduplicative candidate is suboptimal because it incurs unnecessary Integrity violations.

(3) CəO roots

/y'əx, ⓐ, m'uːt/		Max-μ	NoVacDoc	Integrity	Ident[length]
a.	y'ə$_{\mu}$x-múːt	*!			
b.	y'ə$_{ⓐ}$x-múːt		*!		
c. ☞	y'a$_{\mu ⓐ}$x-múːt				*
d.	y'ə$_{ⓐ}$-y'ə$_{\mu}$x-múːt		(?)	*!*	

(4) **NoVacuousDocking(μ) [NoVacDoc(μ)]** (Saba Kirchner 2013:233, based on Wolf 2007)

Informally:

Assess one violation for any underlying floating mora which docks to an output segment, if that segment is not also dominated by some other prosodic unit.

Formally:

$\forall \mu \in I$, where μ is a mora:

If

[$\neg$[$\exists s \in I$ such that s is a segment and μ is attached to s]] (μ is floating in the input)

&

[$\exists \mu' \in O$ & $\mu \Re \mu'$ & $\exists t$, where t is a segment such that μ' directly dominates t]

(μ has an output correspondent that docks to a segment)

Then

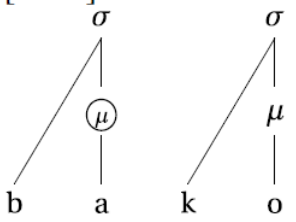
[$\exists p$ where p is a prosodic unit which directly dominates t & $\mu' \neq p$]

- How does NoVacDoc(μ) work?

(5) Assessment of NoVacDoc(μ) for /bako + μ/ (Saba Kirchner 2013:233)

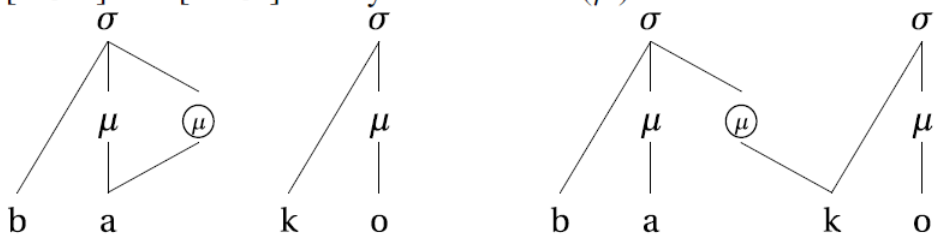
a. Violates

[bako] violates NoVacDoc(μ):



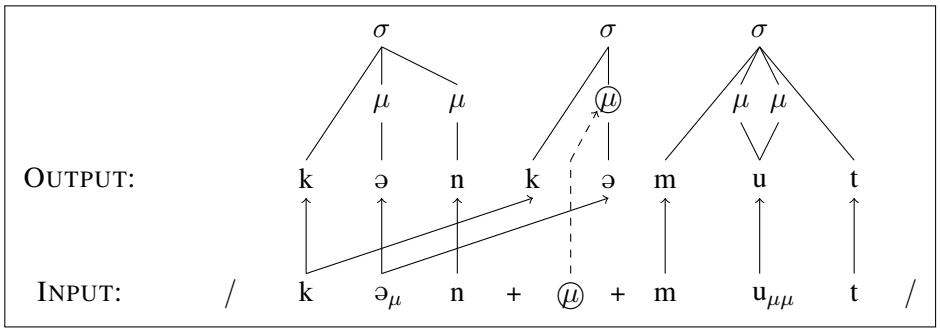
b. Satisfies

[ba:ko] and [bak:o] satisfy NoVacDoc(μ):



- Does reduplication actually help satisfy NoVacDoc?

(6) Floating moras and reduplicative outputs



⋆ It doesn't matter whether ⓜ is the one attached to the first ə or the second ə.

- If we assume that the two ə's in the output are distinct segments (i.e. different *t*'s from the definition in (4)), then this shouldn't actually help.
  - Each ə is dominated by a single mora and nothing else.
- If we assume that NoVacDoc is somehow treating the two ə's as *the same* segment (i.e. a single *t*), then this actually should yield satisfaction.
  - "The ə" is dominated by both ⓜ and another μ, albeit in different syllables.

- The obvious way to fix the definition to accommodate this would be to make reference to the input.
  - Here's my best shot:

(7) Revised: **NoVacuousDocking(μ) [NoVacDoc(μ)]**
Informally:
Assess one violation for any underlying floating mora which docks to an output segment, if that segment does not stand in correspondence with an input segment which has an output correspondent which is not dominated by some other prosodic unit.

Formally:
$\forall \mu \in I$, where μ is a mora:

If

[$\neg$[$\exists s \in I$ such that s is a segment and μ is attached to s]]
&
[$\exists \mu' \in O$ & $\mu \Re \mu'$]
&
[$\exists t \in I$ such that t is a segment & $\exists t' \in O$ such that t' is a segment & $t \Re t'$]
&
[μ' directly dominates t']

Then

[$\exists t'' \in O$ such that t'' is a segment & $t \Re t''$] (t'' may equal t')
&
[$\exists p$ where p is a prosodic unit which directly dominates t'' & $\mu' \neq p$]

⊗ I think this might pose problems with epenthetic vowels...

- If you buy this adjustment, then SK's basic approach works: reduplication is a repair mechanism to host a floating mora.

(8) CəR roots

/kən, ⓜ, m'u:t/		*Superheavy	Max-μ	NoVacDoc	Integ	Id[length]
a.	$kə_{\mu}n_{\mu}$-mú:t		*!			
b.	$kə_{ⓜ}n_{\mu}$-mú:t			*!		
c.	$ka_{\mu ⓜ}n_{\mu}$-mú:t	*!				*
d. ☞	$\underline{kə_{\mu}n_{\mu}}$-$kə_{ⓜ}$-mú:t				**	

- To derive the placement of [n], we can still use the combination of *Clash and WSP, as long as the first syllable is actually stressed in the winning candidate (SK seems to assume it isn't?).

- (Possible) Problem: This predicts lengthening in CəC' roots. As far as I can tell, there's only one example, but it doesn't work this way: $\sqrt{ts'əm'} \rightarrow$ [ts'ə-ts'əm'ə-múːt] 'left after melting'

(9) CəC' roots

/ts'əm', Ⓤ, m'uːt/		*Lar]$_\sigma$	Max-μ	*SprHvy	NoVacDoc	Integ	Id[lng]
a.	ts'a$_{\mu\text{Ⓤ}}$m'-muːt	*!					
b. 💣	ts'a$_{\mu\text{Ⓤ}}$m'ə-muːt						*
c. ☹	ts'ə$_{\text{Ⓤ}}$-ts'ə$_\mu$m'ə-muːt					*!*	

- But CəD roots and SSP-violating CəCC roots do apparently work the expected way:
  - $\sqrt{g^wəd} \rightarrow$ g^{w}aːdəmuːt
  - $\sqrt{k'^wəsx} \rightarrow$ k'^{w}aːsxəmuːt (Saba Kirchner 2010:46)
- So it might not be unreasonable to treat [ts'ə-ts'əm'ə-múːt] as an exception, or say there's something weird about [m'].

- But even if we assume the lengthening forms are the default behavior here, we have a problem with redefinition of NoVacDoc w.r.t. the epenthetic vowel.

(10) Problem with epenthesis

/g^{w}əd, Ⓤ, m'uːt/		*Lar]$_\sigma$	Max-μ	*SprHvy	NoVacDoc	Integ	Id[lng]
a.	g^{w}a$_{\mu\text{Ⓤ}}$d-muːt	*!					
b. ☹	g^{w}a$_{\mu\text{Ⓤ}}$də-muːt						*!
c.	g^{w}ə$_{\text{Ⓤ}}$-g^{w}ə$_\mu$də-muːt					*!*	
d. 💣	g^{w}ə$_\mu$də$_{\text{Ⓤ}}$-muːt						

- If we allow for the epenthetic vowel to be moraic, and we redefine NoVacDoc to be talking about input segments, then it should be possible for the floating mora to dock on the epenthetic vowel without violating NoVacDoc.
  - If this is true, then keeping the base vowel as [ə] will be preferred because it alleviates the Ident[length] violation caused by lengthening.

- SK suggests (somewhere) that these epenthetic vowels are really split vowels coming from the root vowel.
  - This would make it all the more clear that this candidate should satisfy NoVacDoc, because this is exactly what we were trying allow with the redefinition.

- The way out, it seems, is to require that these epenthetic schwas can't host a mora at all (SK says this).
  - This would be reasonable; epenthetic vowels prefer to be short (Steriade 2009).
  - But the evidence for their being non-moraic is based on their supposed stress properties, which appear to only have ramifications for footing, not actual stress placement; so I'm not sold on this.
- The point is: I think we still don't have exactly the right view of NoVacDoc.
  - This question is going to still be there in my reanalysis without NoVacDoc per se.

3 Dealing with Kwakwala's multiple reduplication patterns

- One argument that RED by itself is not sufficient to describe reduplication in Kwakwala is that there are multiple different kinds of reduplication patterns (at least five, some of which are tied to sets of particular suffixes).
  - If there were no difference in underlying representation, we should not be able to generate distinct contrasting patterns.
  - The URs must be more complex than just /RED/.

(11) Kwakwala reduplication patterns (Saba Kirchner 2013:236)

	Meaning	Form	Example	Gloss
a.	Plural	Ciː-	p'iːp'əsp'əy'uː	'ears'
b.	Diminutive	Caː-	baːbəg^{w}anəm	'little boy'
c.	"Too much"	Cə-	məmiːχkən	'sleep too much'
d.	Distributive	*variable*	waːwapstoːla	'watery eyes'
e.	Repetitive	total	d͡ləniːxd͡ləniːka	'keep locking the door'

⋆ Saba Kirchner (2013:238–239) claims that Alderete et al.'s (1999) analysis of fixed segmentism can't generate these facts. That's not true. Their schema for "phonological" fixed segmentism can't, but they also propose a schema for "morphological" fixed segmentism to deal with cases exactly of this sort.

- Saba Kirchner (2013) goes in for different kinds of (partially) un(der)specified prosodic structures as the URs.
  - (c) and (d) are fully empty σ and μ, respectively.
  - (a) and (b) are syllables which are pre-linked to moraic and segmental content (namely, two moras connected to a vowel)

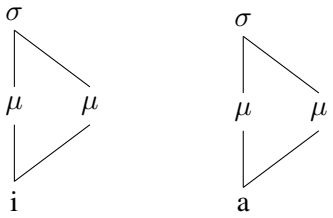
- I think that this approach is sufficient, but maybe still more complicated than necessary.
- I think we can make it work by just specifying the segmental content, and viewing "reduplication" as completely epiphenomenal in all cases.
  → Note that this is actually the goal that SK is setting out to achieve.

(12) Possible underlying representations for reduplication patterns

	Meaning	Form	SK UR	Alternative UR
a.	Plural	Ciː-	Syllable with fixed *iː* (12a)	/iː/
b.	Diminutive	Caː-	Syllable with fixed *aː* (12b)	/aː/
c.	"Too much"	Cə-	Empty syllable (/σ/)	/ə/
d.	Distributive	*variable*	Empty mora (/μ/)	/Ø/
e.	Repetitive	total	Syntactic	Syntactic

(13) SK representations of URs w/ fixed segments

a. b.



- First order of business: Kwawkala strictly forbids onsetless syllables (Saba Kirchner 2013:238).
- SK posits the ranking ONSET ≫ INTEGRITY to rule out candidates that copy just a vowel to fill the empty structures in (12c) and (12d).

⇒ If we assume the alternative URs in (12a,b,c), then positing this same ranking will generate motivate phonological copying to alleviate the onset violations that faithful realization of the prefix would otherwise cause.

(14) *Caː-* (diminutive?) reduplication with the suffixes *-kən* "be somewhere at the same time" and *-kəna* "do at the same time" (Saba Kirchner 2013:238, from Boas 1947:356)

Stem	Suffixed form	Suffixed form gloss
kaːt	kaːkaːtkən	'a long thing is there at the same time'
m'əkʷ	m'aːm'əxʷkən	'a round thing is there at the same time'
t'əmq'	t'aːt'əmχkəna	'pin somebody else also'

(15) Phonological copying to alleviate onset violations

/kaːt$_{RT}$, aː$_{DIM}$, kən$_{SAMETIME}$/	ONSET	DEP-C	ALIGN-DIM-L	INTEGRITY
a. aː-kaːt-kən	*!			
b. ʔaː-kaːt-kən		*!	*	
c. kaːt-aː-kən			**!*	
d. ☞ kaː-kaːt-kən			*	*

  - Making sure that the [aː] ends up at the left and not towards the right will be easier if it belongs to a separate morpheme than the suffix, but its still not impossible.

- It would be worth checking what sorts of alternations we observe when vowels would come together through concatenation (I think these should exist).
  - This is analysis would not be inconsistent with vowel deletion as the general repair. We would just have to say that you can't delete a vowel if it is the only exponent of a morpheme (REALIZE MORPHEME; Kurisu 2001).
  - If so, the prediction via Richness of the Base would be that underlying root-initial vowels delete, not that there is phonological copying to save them.

4 A Realize Morpheme-based analysis of the distributive

- SK's insight about the distributive, which includes the *mut* forms, (given his interpretation of the facts) is that roots that can lengthen without creating a superheavy syllable lengthen, otherwise they "reduplicate".
  - Following Struijke (and sort of following SK), variation in the shape of the reduplicated word in these cases is determined by prosodic factors (namely *CLASH).
- SK's analysis is that the distributive has a UR consisting of a floating mora, and that it's faithfulness to this mora that triggers these two types of behaviors.
- However, we can also understand this in terms of faithfulness without any reference to a floating mora:

⇒ The UR is null but there needs to be a phonological exponent (because of REALIZE MORPHEME).
  ⇒ Lengthening is the least costly faithfulness violation, splitting is the next least costly.

(16) **REALIZE MORPHEME** (RM; Kurisu 2001:39)
Formally:
Let α be a morphological form, β be a morphosyntactic category, and F(α) be the phonological form from which F(α+β) is derived to express a morphosyntactic category β. Then RM is satisfied with respect to β iff F(α+β) $\neq$ F(α) phonologically.

Informally:
All morphemes in the input must contribute phonological content to the output (where deletion and truncation count as phonological content).

  - The formal definition may be a little tricky to deal with for these forms, because the morpheme that's causing the changes doesn't (always) appear independently of a suffix.

- The faithful realization of the root will violate RM. This means that the root must undergo *some* change (but RM doesn't care what it is).
  - If INTEGRITY ≫ IDENT[length], then the preferred unfaithful mapping will be lengthening (≈ "docking of a floating mora").
  - If INTEGRITY is dominated by all other relevant faithfulness constraints, splitting (i.e. "reduplication") will be used whenever lengthening is blocked, e.g. by *SUPERHEAVY.

(17) RM analysis of CəO roots

/y'əx, $Ø_{DIST}$, m'u:t/		RM	IDENT[F]	*SUPERHEAVY	INTEGRITY	IDENT[length]
a.	y'əx-m'u:t	*!				
b.	**y**əx-m'u:t		*!			
c. ☞	y'**a:**x-m'u:t					*
d.	y'əy'əx-m'u:t				*!*	

(18) RM analysis of CəR roots

/kən, $Ø_{DIST}$, m'u:t/	RM	IDENT[F]	*SUPERHEAVY	INTEGRITY	IDENT[length]
a. kən-m'u:t	*!				
b. **k'**ən-m'u:t		*!			
c. k**a:**n-m'u:t			*!		*
d. ☞ k<u>ə</u>nkə-m'u:t				**	

- We still have the epenthesis problem that we ran into with NOVACDOC.
  - We can't allow the epenthetic vowel be parsed as the exponent of the underlying /$Ø_{DIST}$/, or else no other stem change would be called for by RM.

(19) *mut* forms with post-root epenthesis

$\sqrt{g^{w}əd}$	→	g^{w}a:dəmu:t	not *g^{w}əd[-$ə_{DIST}$-]mu:t
$\sqrt{k'^{w}əsx}$	→	k'^{w}a:sxəmu:t	not *k'^{w}əsx[-$ə_{DIST}$-]mu:t
$\sqrt{ts'əm'}$	→	<u>ts'ə</u>ts'əm'əmu:t	not *ts'əm'[-$ə_{DIST}$-]mu:t

- The intuition is that a property which is called for by the regular phonology is not suitable for marking a stem change w.r.t. RM.
  - I ran into the same issue in my analysis of the Gothic preterite system (Zukoff 2017:Ch. 4; cf. Zukoff & Sandell 2015).

- The main thing to worry about when putting together a thoroughgoing RM analysis is that it is consistent with the rankings needed for other processes in the language.
  - I think we're pretty safe in this case, but it's worth thinking about more.

5 A potential way to distinguish between RM and SK's analysis

- In the RM analysis I'm proposing, the "Too Much" pattern is /ə/. SK identified it as /σ/.
  - In the RM analysis, the "reduplicant" vowel is not in correspondence with the root, it's in correspondence with the vowel of the affix.
  - In SK's analysis, it is in correspondence with the root vowel.

- SK thus predicts that the weight alternation between base and reduplicant that we observe in the distributive should also be observable in "Too Much" reduplication, if we ever got heavy (stressed) syllables following the first root vowel (either as part of the root or from a suffix).
- This is because existential faithfulness will only allow for (and thus require) freedom in the placement of segments for prosodic improvement if there is multiple correspondence.

- From what I can glean, we don't observe the alternation in this category (...but I'm not certain that the right conditions hold)

(20) "Too Much" reduplication (Kalmar 2003:5, from Boas 1947:356)

a. mə-míx-kən (SK's *məmiːχkən*)
b. k^{w}ə-k^{w}ə́nx-kən

- In the distributive, we would expect the full/long vowel in (a) and the sonorant coda in (b) to appear in the first copy not the second, *if* the suffix can be stressed (it is a heavy syllable, but there seem to be some morphological conditions on stress too).
- If we do indeed get the behavior in the distributive that SK and Struijke describe (there seem to be some things that look like counterexamples in Kalmar), but we don't get equivalent behavior in the "Too Much" category, then we know that the vowel in "Too Much" is not in correspondence with the root.
- Nothing precludes SK from specifying ə in the UR of the "Too Much" pattern; however, it would reduce the difference between the analysis down to just the distributive, where RM might be preferred due to parsimony and the weirdness of NoVacDoc.

6 Summary

- So, subject to these little details, it looks like you can derive Kwakwala without *any* prosodic specification of inputs **and** without the use of RED morpheme.
  - In three of the patterns, consonant copying is motivated just by Onset.
  - This analysis then contradicts Kawahara's (2007) claim that "copy epenthesis" of consonants never occurs to satisfy a phonotactic requirement (cf. Stanton & Zukoff 2017).
- This also suggests that a lot of cases with fixed segmentism could be reanalyzed in this same way: some melodic material is specified, and copying takes place to fix the resulting syllable structure.

(21) Tigre frequentative formation (Saba Kirchner 2010:130, from Rose 2003)

Regular form	Frequentative	Frequentative gloss
gərf-aː	ger[aːr̲ə]f-aː	'whip a little'
kətb-aː	ket[aːt̲ə]b-aː	'write a little'
nəsħ-aː	nes[aːs̲ə]ħ-aː	'advise a little'
məzz-aː	məz[aːz̲ə]z-aː	'give a little responsibility'

(22) Analysis of Tigre frequentative

/grf_{RT}, e_{AV}, $aːə_{FREQ}$, $aː_{AGR}$/	Onset	Align-Rt-L	Align-Av-L	Integ	Align-Freq-L
a. ge.aː.ərf-aː	*!*				**
b. ge.aːrəf-aː	*!				**
c. ☞ geraːr̲əf-aː				*	***
d. gaːr̲əref-aː			*!	*	*

- Something additional will need to be used to distinguish *geraːr̲əf-aː* from **geg̲aːrəf-aː*.

- Big question going forward: how many reduplication patterns could be generated from
  (i) a null UR + RM + low-ranking INTEGRITY, and/or
  (ii) a segmentally-specified UR + phonotactics + low-ranking INTEGRITY?

References

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