Reduplication in Tawala isn't Base-Dependent

Companion Handout

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1 Data and Analysis Overview

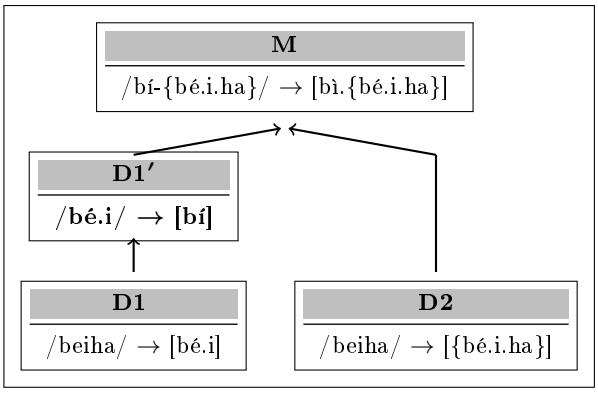
- Tawala has four distinct, predictable reduplicant shapes:
  - $C_1V_1.V_2$-initial bases copy $\underline{C_1V_2}$- (**Type A**)
  - CVCV-initial bases copy $\underline{\text{CVCV}}$- (**Type B**)
  - VC-initial bases copy $\underline{\text{VC}}$- (**Type C**)
  - Bases that begin in a repeated CV sequence locally double the first root vowel (**Type D**)

	Base	Reduplicated
Type A:	*bé.i.ha*	→ *bì.bé.i.ha*
Type B:	*hu.né.ya*	→ *hù.ne.hu.né.ya*
Type C:	*a.tú.na*	→ *à.ta.tú.na*
Type D:	*gu.gú.ya*	→ *gù.u.gú.ya*

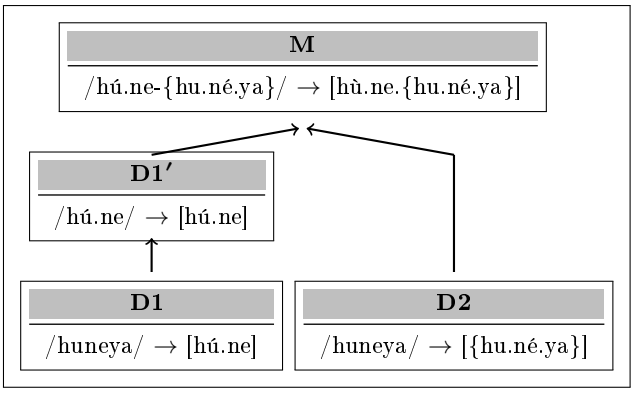
- The MDT derivations are given below.

- **Main components of analysis:**
  1. Truncation in D1
  2. Prosodic Root ({...}) parsing in D2
  3. Hiatus resolution in M, sometimes blocked by FAITH
  4. V_1-deletion under hiatus in D1′

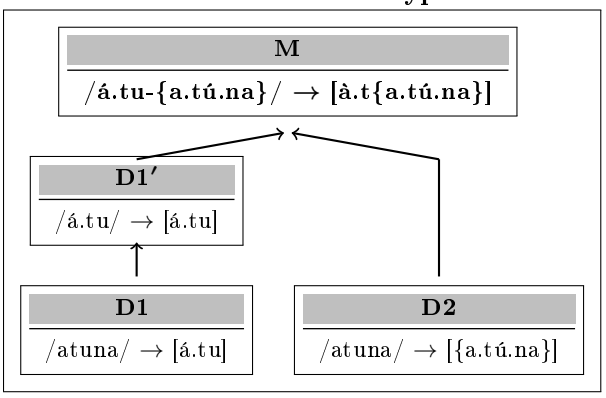
MDT derivation of Type A



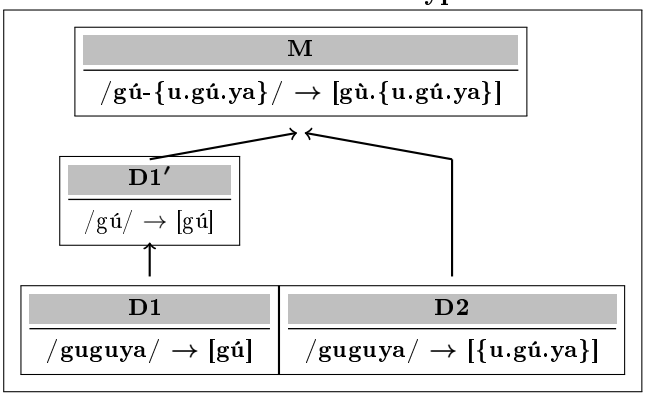
MDT derivation of Type B



MDT derivation of Type C



MDT derivation of Type D



2 Truncation in D1

- First step in MDT analysis (IZ:95, HHK): D1 preferentially truncates input down to two syllables (1A,B,C).
  - This is effectuated by the ranking in (2) (constraints defined in (3)), and demonstrated for Type B in (4).

  → It is the combined effect of StressL and NonFinality that requires at least two syllables in the truncatum. (This also correctly places stress on the first syllable.)

(1) **Output of D1**

	Input	[D1]
A	*beiha*	→ *bé.i*
B	*huneya*	→ *hú.ne*
C	*atuna*	→ *á.tu*
D	*guguya*	→ *gú*

(2) **Ranking for 2σ truncation**
StressL, NonFin ≫ *Struc) ≫ Max

(3)
a. **StressL**: Assign one violation if the leftmost syllable is unstressed. (*[#$\breve{\sigma}$])
b. **NonFinality**: Assign one violation if the rightmost syllable is stressed. (*[$\acute{\sigma}$#])
c. ***Struc**: Assign one violation for each segment in the output.
d. **Max-IO**: Assign one violation for each input segment without an output correspondent

(4) **D1 derivation of Type B (same for Types A & C)**

/huneya/	StressL	NonFin	*Struc	Max-IO
a. hú.ne.ya [100]			6!	
b. ☞ hú.ne [10]			4	2
c. hú [1]		*!	2	4
d. hu [0]	*!		2	4

- However, Type D, the crucial case in HHK's argument, is truncated to a single syllable.
  - This is effectuated by ranking *Repeat(initial) (Zukoff 2021; cf. HK) (5) and StressL above NonFin.
  - This ranking is shown in (6) and demonstrated for Type D in (7).

(5) ***Repeat(initial)**: Assign one violation if the first two syllables are identical. (*[#$\sigma_\alpha\sigma_\alpha$])

(6) **Ranking for 1σ truncation in Type D**: StressL, *Repeat(init) ≫ NonFin

(7) **D1 derivation of Type D**

/gu_1gu_2ya/	StressL	*Repeat(init)	NonFin
a. $gú_1.gu_2$.ya [100]		*!	
b. $gú_1.gu_2$ [10]		*!	
c. ☞ $gú_1$ [1]			*
d. gu_1 [0]	*!		

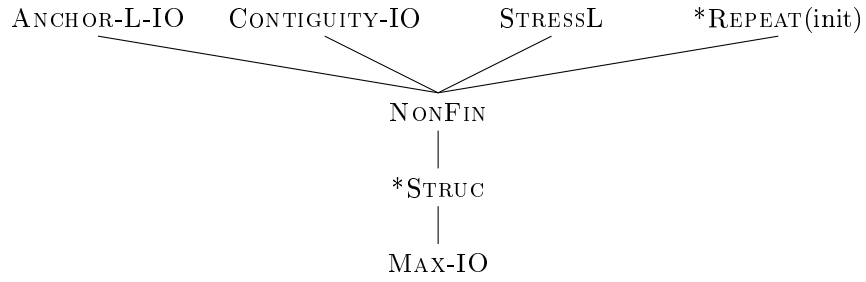
- High-ranked Anchor-L (8a) and Contiguity (8b) ensure that other 2σ alternatives are not viable (9).

(8)
a. **Anchor-L-IO**: Assign one violation if the leftmost segment in the input does not correspond to the leftmost segment in the output.
b. **Contiguity-IO**: Assign one violation for each pair of adjacent segments in the output which were not adjacent in the input.

(9) **D1 derivation of Type D**

/gu$_1$gu$_2$ya/		Anchor-L	Contiguity	NonFin
a. ☞ gú$_1$	[1]			*
b. ú$_1$.gu$_2$	[10]	*!		
c. gú$_1$.ga	[10]		*!	
d. gú$_1$.ya	[10]		*!	
e. gú$_2$.ya	[10]	*!		

(10) **Ranking summary for D1**



3 Type D C_1-deletion in D2

- D2 parses all its segment into an output Prosodic Root (cf. IZ:140; Downing 1998a,b).
  - This is effectuated with the constraint Max–Input-PRoot (11), as shown in (12).

(11) **Max-IP**: Assign one violation for each input segment which does not have an output correspondent contained within a Prosodic Root.

(12) **Max-IP induces PRoot parsing, e.g. for Type A**

/beiha/	Max-IP
a. bé.i.ha	5!
b. {bé.i}.ha	2!
c. ☞ {bé.i.ha}	

⋆ **Note:** it is crucial that D1 not output a PRoot.
- Therefore, D1 needs to have a constraint against PRoot's in the output (e.g. *PRoot) or against parsing segments into a PRoot (unclear how this would work), which outranks Max-IP.
- D2 needs to have the reverse ranking: Max-IP ≫ *PRoot

- The only constraint which forces violation of Max-IP in D2 is *Repeat(init).
  - If *Repeat(init) outranks Max-IP *and* Max-IO (13), we generate initial-C deletion for Type D only (14).
  - Since there is not general truncation in D2, we know that *Struc ranks below at least one of the Max constraints.

(13) **Ranking for initial-C deletion in Type D**: *Repeat(init) ≫ Max-IP, Max-IO

(14) ***Repeat(init)-driven deletion in D2 for Type D**

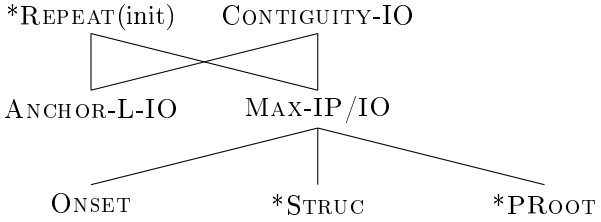
/gu$_1$gu$_2$ya/	*Repeat(init)	Max-IP	Max-IO	*Struc
a. {gu$_1$.gú$_2$.ya}	*!			6
b. g{u$_1$.gú$_2$.ya}	*!	*		6
c. ☞ {u$_1$.gú$_2$.ya}		*	*	5

- The fact that the *Repeat(init) violation is repaired by *initial* deletion and not medial deletion shows that Contiguity-IO ≫ Anchor-L-IO (15).
  - At least the higher-ranked Max constraint must also outrank Onset, because initial-C deletion (15b) is preferred to initial-CV deletion (15c).
  - The low ranking of Onset in D2 also explains why hiatus is tolerated stem-internally in D2 (e.g. {bé.i.ha}).

(15) ***Repeat(init)-driven deletion in D2 for Type D**

/gu_1gu_2ya/	*Repeat(init)	Contig-IO	Anch-L	Max-IP/IO	Onset
a. {gu_1.$gú_2$.ya}	*!				
b. ☞ {u_1.$gú_2$.ya}			*	*	*
c. {$gú_2$.ya}			*	**!	
d. {$gú_1$.ya}		*!		**	

(16) **Ranking summary for D2**



- D2 also enforces the language's normal stress pattern (see Ezard 1997):
  - Right-to-left trochees (i.e., penult primary stress + alternating stress leftward from the penult).
  - Unless the penult lacks an onset and the antepenult has a higher vowel, in which case stress retracts to the antepenult, as in *bé.i.ha.*

⋆ I will not spell out the stress constraints here, except to note that StressL must be low-ranked, unlike in D1.

4 Restricted hiatus resolution in M

- The only process in M is deletion to repair hiatus, which occurs at the reduplicant-base juncture for Type C (19).
  - This can be modeled using the ranking Onset ≫ Max-IO (18).
  - To prevent deletion of reduplicant-initial vowels in Type C, we could include Anchor-L-IO ≫ Onset in the rankings, or we could use a constraint protecting stressed vowels (17), which will be needed independently below.

(17) **MaxV́-IO**: Assign one violation for each stressed vowel in the input that lacks a correspondent in the output.

(18) **Ranking for hiatus resolution in M**: MaxV́-IO ≫ Onset ≫ Max-IO[1]

(19) **Onset-driven reduplicant-V_2 deletion in M for Type C**

/á.tu-{a.tú.na}/	MaxV́-IO	Max-PO	Onset	Max-IO
a. à.tu.{a.tú.na}			**!	
b. à.tu.{tú.na}		*!	*	*
c. ☞ à.t{a.tú.na}			*	*
d. t{a.tú.na}	*!			*

[1] If we assume that adjacency relations are established in the input across morpheme boundaries, then Contiguity-IO would have to rank below Onset as well to allow deletion in Type C.

- Crucially, hiatus is left unresolved in Type D. This can be derived from the combined effect of two special MAX constraints, both of which are sensitive to input properties of segments:
  - A constraint protecting underlyingly stressed vowel: MAXV́-IO (17).
  - A constraint protecting underlying PRoot segments: MAX-PO (20).

(20) **MAX–PROOT-OUTPUT [MAX-PO]**: Assign one violation for each vowel segment which was part of a PRoot in the input that does not have an output correspondent.

- These constraints, unlike general MAX-IO, rank *above* ONSET (21), and thus can block hiatus resolution.
  - They succeed in doing so across the juncture for Type D (22), because the lefthand vowel is stressed and the righthand vowel belongs to a PRoot.

(21) **Full ranking for hiatus (non-)resolution in M**: MAXV́-IO, MAX-PO ≫ ONSET ≫ MAX-IO

(22) **Hiatus tolerance across the juncture for Type D in M**

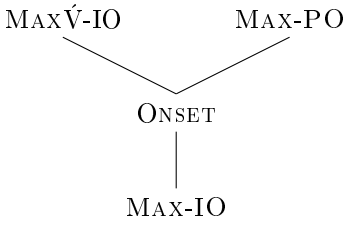
/gú-{u.gú.ya}/	MAXV́-IO	MAX-PO	ONSET	MAX-IO
a. ☞ gù.{u.gú.ya}			*	
b. gù.{gú.ya}		*!		*
c. g{u.gú.ya}	*!			*

- MAX-PO also explains why there is no hiatus-driven deletion base-internally in, e.g., Type A:

(23) **Hiatus tolerance base-internally for Type A in M**

/bí-{bé.i.ha}/	MAXV́-IO	MAX-PO	ONSET	MAX-IO
a. ☞ bì.{bé.i.ha}			*	
b. bì.{bé.ha}		*!		*

(24) **Ranking summary for M**



- The only other piece of phonology in M is demotion of the reduplicant's underlying primary stress to secondary stress.

5 An extra node for Type A: Hiatus-resolution in D1′

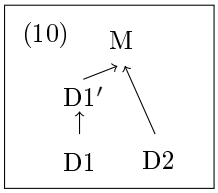
∗ There is one problem remaining with this analysis with respect to Type A (which was suppressed in (23)):
  - Given that the output of D1 for Type A is [bé.i], we predict that the unstressed /i/ should delete under hiatus in M, yielding *[bè.{bé.i.ha}] (25b).
  - If deletion of the /i/ were blocked by the fact that this would introduce an initial repetition (a *REPEAT(init) violation), the alternative would be *no deletion* [bè.i.{bé.i.ha}] (25a), not deletion of stressed /é/ (25c,d).
  - And even if something could prefer /é/ deletion, we would still need something else to force the addition of stress to the /i/ in order to overcome (25c).

(25) **Incorrect prediction for Type A in M**

/bé.i-{bé.i.ha}/	(*Rpt(init))	MaxV́-IO	Max-PO	Onset	Max-IO	Dep[stress]-IO
a. (💣) bè.i.{bé.i.ha}				*(!)		
b. 💣 bè.{bé.i.ha}	(*!)				*	
c. bi-{bé.i.ha}		*!			*	
d. ☹ bì-{bé.i.ha}		*!			*	*

- The simplest solution (following HHK:15–16) is to introduce an additional, semantically vacuous node [D1′] (26) between D1 and M that maps /bé.i/ → [bí] (28).

(26) **MDT derivational structure with D1′**



- The way to do this is as follows:
  - Have Onset outrank MaxV́-IO and Max-IO (27a) to make sure stressed vowel deletion will be tolerated as a means of avoiding hiatus.
  - Also have Onset outrank Contiguity-IO to allow for the discontiguous mapping resulting from V_1-deletion, and outrank Dep[stress]-IO to allow for restressing the /i/ (27a).
  - Have Anchor-R-IO outrank MaxV́-IO and Contiguity-IO (27b) to prefer keeping the rightmost vowel instead of the stressed one, which is also the one that's adjacent to the stem-initial consonant.
  - StressL must outrank Dep[stress]-IO (27c) to favor inserting stress onto the newly leftmost /i/, and also outrank NonFin (27c) (just as in D1) because this means that the final vowel will now be stressed.

(27) **Rankings in D1′ to fix Type A**

a. Onset ≫ MaxV́-IO, Max-IO, Contiguity-IO, Dep[stress]-IO [(28d) ≻ (28a)]
b. Anchor-R-IO ≫ MaxV́-IO, Contiguity-IO [(28d) ≻ (28b)]
c. StressL ≫ Dep[stress]-IO, NonFin [(28d) ≻ (28c)]

(28) **Fixing Type A in D1′**

/bé.i/	Onset	Anchor-R	StressL	MaxV́	Contiguity	Dep[stress]-IO	NonFin
a. bé.i	*!						
b. bé		*!					*
c. bi			*!	*	*		
d. ☞ bí				*	*	*	*

- We'll also need Anchor-L-IO to outrank Onset (29) in order to avoid deleting the stem-initial vowel in Type C (30).

(29) **Ranking for Type C in D1′**: Anchor-L-IO ≫ Onset

(30) **Not messing up Type C in D1′**

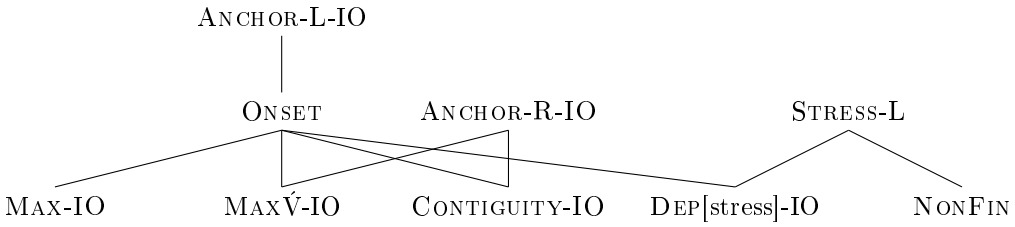
/á.tu/	Anchor-L	Onset	Anchor-R	MaxV́-IO	Contiguity
a. ☞ á.tu		*			
b. tú	*!			*	

- Once we implement these rankings in D1′, we achieve the desired result for Type A in M (31); in fact, there are no obvious competitor candidates.

(31) **Correct result for Type A in M**

/**bí**-{bé.i.ha}/	MaxV́-IO	Max-PO	Onset	Max-IO
a. ☞ bì-{bé.i.ha}				

(32) **Ranking summary for D1′**



6 Conclusion

- This analysis, while consistent, requires four substantially different cophonologies.
  - The processes that we need to posit in the different nodes bear little resemblance to one another, and sometimes even make contradictory demands.

- MDT provides us with the tools we need to fix all the problems.
  - But the facility with which we can use disparate tools in an ad hoc fashion should give us pause about the restrictiveness of the theory.

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