Onset Skipping in the Serial Template Satisfaction Model of Reduplication

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1. Introduction

A number of languages display *onset skipping effects*, where reduplication "copies" a discontiguous string:

(1) Onset Skipping: **the base begins with a *complex* onset, but the reduplicant has a *simplex* onset.** For example, Sanskrit √*druv-* → reduplicated *du-druv-* (**dru-druv-*)

In many languages that display such effects (including the ancient Indo-European [IE] languages), onset skipping *per se* applies only to roots with certain types of initial consonant clusters (cf. Steriade 1988, *a.o*).

In Base-Reduplicant Correspondence Theory (BRCT; McCarthy & Prince [M&P] 1995), a number of different analytical options are available: e.g. an "a-templatic" OCP/anti-repetition markedness-based account (Zukoff 2014, 2015, *in press LI*). [For recent alternatives, see Fleischhacker (2005), Keydana (2012).]

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Serial Template Satisfaction (STS) is a framework proposed by McCarthy, Kimper, & Mullin (2012) [MKM] for analyzing reduplication within Harmonic Serialism (HS). While MKM do address one case of onset skipping (Sanskrit), the broader range of facts are somewhat more difficult to capture in STS.

Incorporating these facts into STS requires two (unappealing) amendments to the theory:

1. STS *does* predict the unattested reduplicant-medial coda skipping pattern, *contra* MKM.
2. The inventory of reduplicative templates in STS must include underspecified C, contrary to the PMH.

2. Onset Skipping in Reduplication

(2)	Root Shape	Red. Shape	Example			
a. Sanskrit	i. *Rising son. clusters*	C_1V	/RED-√druv-/	→	du-druv-	(*dru-druv-)
	ii. *Obstruent clusters*	C_2V	/RED-√stʰaː-/	→	ta-stʰaː-	(*sa-stʰaː-)
b. Gothic (= Klamath)	i. *Rising son. clusters*	C_1e	/RED-√groːt/	→	ge-groːt	(*gre-groːt)
	ii. *Obstruent clusters*	C_1C_2e	/RED-√stald/	→	ste-stald	(*se-stald)
c. Ancient Greek	i. *Rising son. clusters*	C_1-e	/RED-e-√klin-/	→	k-e-klin-	(*kl-e-klin-)
	ii. *Obstruent clusters*	_-e	/RED-e-√stal-/	→	_-e-stal-	(*s-e-stal-)

Generalizations:

1. Each language shows onset skipping for rising sonority (TR) clusters (2.a–c.i).
2. Each language fails to show onset skipping for other roots shapes (incl. ST) (2.a–c.ii):
   a. Sanskrit copies C_2
   b. Gothic copies the whole cluster (C_1C_2)
   c. Ancient Greek copies nothing

Notes:

- In Ancient Greek, all non-TR clusters pattern with ST: TT, TS, NN, SN (e.g. *kt, ps, mn, sm*) (cf. Steriade 1982).
- Outside of IE, Klamath displays the same set of properties (Barker 1964; Steriade 1988).
  - TR clusters show skipping: √*pni-* → *pi-pnaʔaːk*
  - All other clusters: TT, RC, SC (e.g. *kt, lm, lw, wt, sl, sʔ*), show cluster copying, *à la* Gothic: √*sdagal* → *sda-sdagal-*

Any analysis of these reduplicative systems must account for differential treatment by cluster type.

3. Analyzing Cluster-dependent Skipping in BRCT

In any approach, a constraint *Complex can motivate reduplicant cluster reduction. (In BRCT, some other "size restrictor" could also be involved.) However, this alone does not determine how the cluster gets reduced.

- For Sanskrit, MKM (and others) use the Onset Margin Hierarchy (OMH; Prince & Smolensky 1993) to select the best (i.e. least sonorous) onset, namely the stop in both TR (C_1) and ST (C_2).
- However, *Complex + OMH can't explain Gothic/Klamath; in initial ST-clusters (and others for Klamath), the cluster is not reduced at all: Gothic /RED-√stald/ → *ste-stald* (**te-stald*, **se-stald*).

An alternative, unified analysis follows from a different set of generalizations (Zukoff 2015):

- Reduplicant cluster reduction preferentially selects C_1 (via AnchorL-BR or Locality in BRCT).
- Consonant repetitions are dispreferred in pre-obstruent position: $*C_\alpha VC_\alpha T$.
  - This is derived from facts about phonetic cues and perception (cf. Zukoff 2015).
  - A sequence *SVST (sesta)* or $T_\alpha VT_\alpha T_\beta$ *(pepta)* violates $*C_\alpha VC_\alpha T$, but a sequence *TVTR (kekla)* doesn't.
- Different rankings of *Complex, $*C_\alpha VC_\alpha T$, and AnchorL generate the distinct behaviors of Sanskrit and Gothic/Klamath. This holds in both BRCT and STS (as long as AnchorL is allowed in Con).

(3) C_2 Deletion vs. C_1 Deletion in Sanskrit

i. /RED-druv-/	$*C_\alpha VC_\alpha T$	*Complex	AnchorL
a. dru-druv-		2 W	
☞ b. du-druv-		1	
c. ru-druv-		1	1 W
ii. /RED-stʰaː-/	**$*C_\alpha VC_\alpha T$**	***Complex**	**AnchorL**
a. sta-stʰaː-		2 W	
b. sa-stʰaː-	1 W	1	
☞ c. ta-stʰaː-		1	1

C_2 Deletion vs. Cluster Retention in Gothic

i. /RED-groːt/	$*C_\alpha VC_\alpha T$	AnchorL	*Complex
a. gre-groːt			2 W
☞ b. ge-groːt			1
c. re-groːt		1 W	1
ii. /RED-stald/	**$*C_\alpha VC_\alpha T$**	**AnchorL**	***Complex**
☞ a. ste-stald			2
b. se-stald	1 W		1
c. te-stald		1 W	1

4. Ingredients for STS analysis of reduplication

1. Reduplicative morphemes are lexical entries that consist of empty prosodic structure (e.g. foot, syllable, or mora, per the Prosodic Morphology Hypothesis (PMH); M&P 1986).
2. Constraint Headedness(X) requires prosodic constituents (of type X) to have heads (of type X-1).
3. The operation **Copy(X)** (modulated by constraint *Copy(X)) copies a *contiguous string* of constituents of type X from the base to satisfy Headedness (for the relevant prosodic category).

5. Onset Skipping predicts Coda Skipping in STS

Since copying is limited to contiguous strings, onset skipping cannot be generated by a single derivational step. Skipping must result from first copying the whole cluster + vowel, then reducing the cluster (4).

(4) Sanskrit /σ-druv/ $\xrightarrow{copying}$ *dru-{druv}*$_{ROOT}$ $\xrightarrow[\text{MaxRoot} \gg \text{*Complex} \gg \text{MaxAffix}]{\text{non-root } \textbf{cluster} \text{ reduction}}$ [du-{druv}$_{ROOT}$]

This requires the TETU (M&P 1994) ranking MaxRoot ≫ *Complex ≫ MaxAffix (base clusters not reduced). This Root-Affix faithfulness asymmetry predicts reduction effects on red.-medial clusters via NoCoda (5).

(5) *unattested* /ft-paltiru/ $\xrightarrow{copying}$ *palti-{paltiru}*$_{ROOT}$ $\xrightarrow[\text{MaxRoot} \gg \text{NoCoda} \gg \text{MaxAffix}]{\text{non-root } \textbf{coda} \text{ reduction}}$ *[pati-{paltiru}$_{ROOT}$]

Since STS requires TETU *copy + deletion* to analyze onset skipping effects, then it necessarily predicts coda skipping effects like (5). MKM claim that (5) is unattested, and argue (incorrectly) that STS can't generate it. This then does not constitute a point of divergence between STS & BRCT, which also predicts such effects.

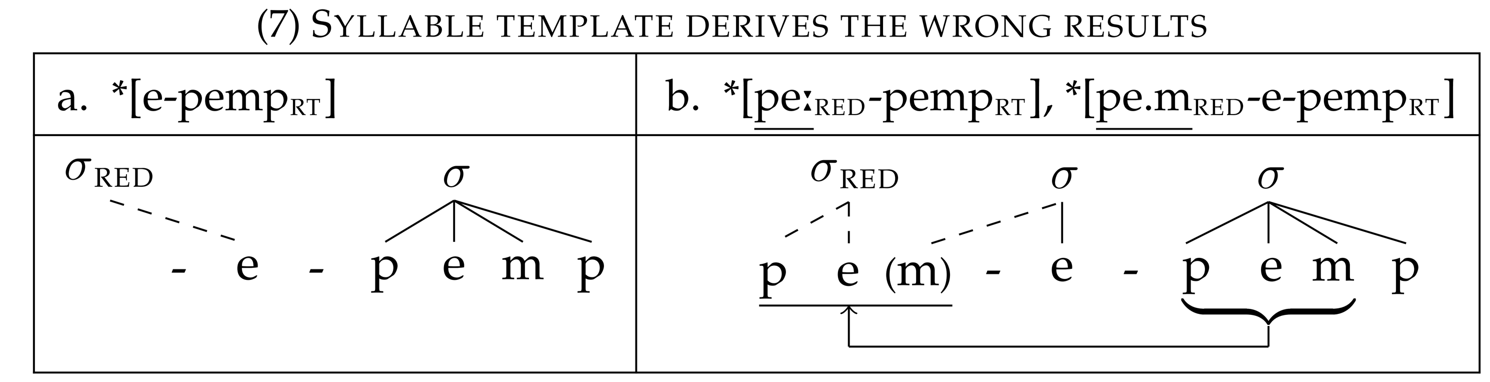
6. Ancient Greek requires C template in STS

In STS, a σ template *copy + deletion* approach works for Sanskrit, Gothic, and Klamath (cf. (4)), but it won't work for Ancient Greek: Step 1 /sta-stal-/ ↛ Step 2+ [e-stal-]. Instead, **Ancient Greek requires a C template**, in part because its reduplicative vowel is underlying (*à la* Alderete et al. 1999; Zukoff *in press LI*).

(6) Perfect stem in A. Greek

CVX	√pemp-	→ *pepemp-*
TRVX	√klin-	→ *keklin-*
STVX (etc.)	√stal-	→ *estal-*
VX	√onoma-	→ *ɔːnoma-*
[VX (exceptional)	√oreg-	→ *orɔːreg-*]

(7) Syllable template derives the wrong results

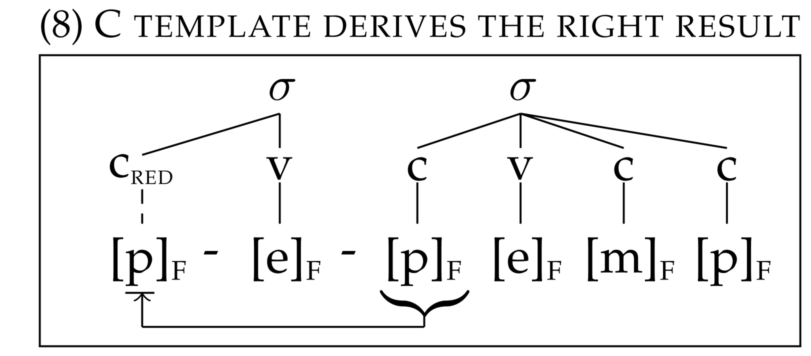


Yet, the following components can generate C-copying (8):

1. Underspecified C as the reduplicative template (C_{RED})
2. A copy operation that copies *melodic features* (**Copy[F]**)
3. A Headedness(C) constraint

- McCarthy (2008, 2011) uses Headedness(C) (≈ "HavePlace") in the analysis of CodaCond effects in HS.

(8) C template derives the right result



The following rankings can generate the non-copying pattern in obstruent-cluster roots (i.e. *e-stal-*, *e-kton-*, *e-pseus-*, *etc.*) given a C template: $*C_\alpha VC_\alpha T$, Copy-Locally ≫ Headedness(C) — *e-stal-* ≻ **se-stal-*, **te-stal-*

- The underspecified C can't receive features via epenthesis, and deletes at end of derivation rather than surfacing as a placeless consonant (laryngeal *h*): Dep[F] ≫ Headedness(C) ≫ MaxAffix — *e-pseus-* ≻ **te-pseus-*, **he-pseus-*
- It is unclear whether Copy-Locally is sufficient to prevent C-copying to VCX roots: i.e. √onoma- → **n-ɔːnoma-*.

7. Conclusion: onset skipping effects are problematic for STS

1. One of the main results of STS has to be abandoned: namely, to capture onset skipping effects, STS must predict unattested medial coda skipping effects, *contra* MKM. STS and BRCT are thus equivalent on this point.
2. The need for a C template in Ancient Greek forces a retreat from (the strongest version of) the PMH. This requires a re-evaluation of the sorts of interactions possible in the system, and the system's full typological predictions.

The conceptual problem of the C template in A. Greek need not arise in BRCT, since that analysis does not require templates at all, following "a-templatic" approaches in Generalized Template Theory (see Zukoff *in press LI* for analysis). Given these issues, coupled with concerns over MKM's interpretation of the reduplication-phonology interaction data, and the tools required to capture other complex reduplication patterns (cf. Somerday 2015), it is unclear if STS is viable in its current form.