Directionality of cluster simplification in Optimality Theory

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This paper argues that most of the deletion processes found in VCCV clusters may be explained in classic Optimality Theory (OT; Prince & Smolensky 1993/2004) using constraints on phonology-prosody interface (McCarthy & Prince 1993). The observation that VC_1C_2V clusters cross-linguistically simplify to VC_2V is due to Wilson (2001). Since classic OT is largely unable to express directionality of processes, Wilson posits a different approach to the framework based on targeted constraints. Revising Wilson's observation, McCarthy (2008) proposes an analysis of the generalization using Harmonic Serialism. As argued in the current paper, the phenomenon regarding VCCV simplification is readily analyzable without introducing additional complications to the theory and the analysis maintains a strictly parallel character.

Let us assume that cluster simplification is principally driven by a constraint militating against stops released into obstruents (Wilson 2001), *WEAKC. As shown in (1), Classic OT is unable to capture the process $VC_1C_2V \rightarrow VC_2V$.

(1) $VC_1C_2V \rightarrow VC_2V$ – failed evaluation

VC_1C_2V	*WEAKC	MAX
a. VC_1C_2V	*!	
b. VC_2V		*
c. VC_1V		*

The desired winner, (1b), incurs the same number of violations as candidate (1c). Various solutions to this problem have been put forward, including positional faithfulness (Wilson 2001) or serialism in OT (McCarthy 2008). The latter solution gives up on the strictly parallel evaluation of candidates. The former, on the other hand, may involve positing a constraint such as MAX_{Prevoc}, which prohibits segment deletion in the prevocalic position. However, when we look at the data adduced in Wilson (2001), it immediately becomes clear that MAX_{Prevoc} makes incorrect predictions. Specifically, consonant deletion still targets the first member of a consonant cluster, even if such a cluster is a result of vowel deletion.

(2) Cluster simplification (Wilson 2001 and references therein)

Diola-Fogny	**West Greenlandic**
le**t**+**k**u+jaw → le**k**ujaw 'they won't go'	qani**k**+**l**erpoq → qani**l**erpoq 'begins to approach'
Carib	**Tunica**
s+enaa**p**ɨ+**s**a → senaa**s**a 'I eat it'	ti'tih**k**i+**t**ʔɛ → ti'tih**t**ʔɛ 'a river'

For example, in Carib, /s+enaapɨ+sa/ becomes [senaasa] 'I eat it'. Both consonants, /p/ and /s/ are prevocalic in the input and hence MAX_{Prevoc} is unable to distinguish between *[senaapa] and the attested [senaasa].

In order to account for the examples in (2), Wilson (2001) posits targeted constraints in OT, which compare the output candidates with other, minimally different candidates. This approach successfully generates the attested outputs of consonant deletion. However, it also introduces additional abstractness to the theory. Specifically, unlike O-O faithfulness, which compares the candidates under evaluation to an existing output form, targeted constraints compare each violating candidate to an abstract, potential candidate that is minimally different.

*(3) Evaluation with a targeted constraint T-*WEAKC*

VC_1C_2V	T-*WEAKC	MAX
a. VC_1C_2V	$VC_2V > VC_1C_2V$!	
b. VC_1V		$VC_1C_2V > VC_1V$!
☞ c. VC_2V		$VC_1C_2V > VC_2V$

In (3), the constraint ranking establishes the harmonic hierarchy of outputs VC_2V > VC_1C_2V > VC_1V. Importantly, the targeted constraint T-*WEAKC compares the output that violates it (VC_1C_2V) with a minimally different theoretical output that removes the locus of the violation. Here, (3a) is compared with (3c), which eliminates the target of T-*WEAKC, i.e., the unreleased (or weak) stop. Crucially, candidate (3b) does not remove the relevant context that is prohibited by T-*WEAKC and hence is not considered for comparison.

The additional abstractness is not a burden for a theory if the theory becomes more adequate. However, a simpler solution, if available, is more desirable.. Looking at the data in (2), it appears that the preservation of the second member of the cluster may be attributed to morphology-prosody alignment (McCarthy & Prince 1993). Specifically, ALIGNL(M, σ), which requires that the left edge of a morphological constituent align with the left edge of a syllable, readily preserves the C_2. I ignore the constraint responsible for vowel deletion.

(4) s+enaap~~i~~+sa → senaasa 'I eat it'

	s+enaa**p**~~i~~+**s**a	ALIGNL(M, σ)	*WEAKC	MAX
	a. senaa**ps**a		*!	
☞	b. senaa**s**a			*
	c. senaa**p**a	*!		*

A high-ranked alignment constraint together with * WEAKC assures the emergence of the second member of the cluster, even if both members are underlyingly prevocalic. A natural question that arises when looking at (4) is whether Wilson's generalization holds inside morphemes. Consider some examples from Basque, which deletes preconsonantal stops: *o**pt**imista* > *o**t**imísta* 'optimist', *o**bs**esión* > *o**s**esiño* 'obsession' (Hualde & Bilbao 1992: 13). Clearly, ALIGNL does not apply to these examples since deletion takes place inside morphemes. A solution to this issue is found in segmental merger, or coalescence. Basque seems to exhibit independent evidence for coalescence: /su**k** **d**usti/ → [su**t**usti] 'you (erg.) everything', /ba**t** **b**akarrik/ → [ba**p**akarrik] 'only one' (Hualde & Bilbao 1992: 17-18). Crucially, in coalescence, the preservation of the features of the prevocalic C in a cluster is assured by a high-ranked positional faithfulness constraint, IDENT(Place)$_{Prevoc}$.

(5) optimista → otimista 'optimist'

	op$_1$t$_2$imista	MAX	IDENT(Place)$_{Prevoc}$	UNIFORMITY
	a. ot$_2$imista	*!		
	b. op$_{1,2}$imista		*!	*
☞	c. ot$_{1,2}$imista			*

The positional faithfulness approach does not create additional problems in the analysis of assimilation in VCCV clusters (contrary to what McCarthy 2008 suggests). Both place and voice assimilation are successfully derived by the interaction of AGREE(Place), IDENT(Place), IDENT(Place)$_{Prevoc}$ and IDENT(Place)$_{Root}$ (Lamont 2016). In this view, the so called coda-onset asymmetry is not actually fully dependent on the syllable structure (Coda Condition), but rather on the interaction of both the syllable well-formedness constraints as well as other constraints.

References

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