Reduction and Syncope in Klamath Reduplication

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Reduplication & The OCP

- When a reduplicative prefix is present, a short vowel in the initial syllable of the base reduces to schwa or deletes entirely.
- Reduction occurs when the base vowel is in a closed syllable, while syncope occurs when the base vowel is in an open syllable:

(1) Reduction in Closed Syllables
a. qlin 'choke' sni-qlən (causative)
d. wejli 'lisps' we-w'əjli (distributive)

(2) Syncope in Open Syllables
c. lt'oq'a 'thumps' so-lt_q'a (reflexive)
d. paga 'barks' pa-p_ga (distributive)

- This process is limited prefixal reduplication; full-root reduplication does not trigger reduction or syncope, and long stem vowels are also exempt.
- Klamath reduplicative reduction and syncope raises several important questions:
  i. **Why does this process occur always and only with reduplication?**
  ii. **Why is the stem vowel always affected, and never the vowel in the reduplicant?**
  iii. **What factors govern the distribution of reduction and syncope in these forms?**

- Reduplication is antithetical to the OCP — it demands repetition, which the OCP seeks to avoid.
  – Reduplicative reduction and syncope in Klamath represent a tension between the need for the reduplicative prefix to surface and the desire of the OCP to avoid repetition of adjacent elements.
- A primitive OCP constraint banning identity in adjacent vowels:

(3) OCP-V
Identical vowels in adjacent syllables are prohibited.

- OCP-V conflicts with a faithfulness constraint in the Max family (McCarthy and Prince, 1995) that requires vowel place identity:

(4) Max(VPlace)
Vowel place in S_1 must have a correspondent in S_2; if S_1 has vowel place features, then S_2 must also have vowel place features.

- Max(VPlace) must be distinguished from Ident(Feature) constraints, which require identity between features:

(5) Ident(VPlace)
Correspondent segments are identical in vowel place; if both S_1 and S_2 have vowel place features, they must be identical.

- In order for reduction to occur, OCP-V must crucially dominate Max(VPlace): OCP-V ≫ Max(VPlace).
- To prevent dissimilation from occurring instead of reduction, Ident(VPlace) must also crucially dominate Max(VPlace): Ident(VPlace) ≫ Max(VPlace).

(6)

/sn{v}+qlin/	OCP-V	Ident(VPlace)	Max(VPlace)
a. sniqlin	*!		
b. sniqlan		*!	
c. ☞ sniqlən			*

Syncope: Weightless Schwa

- OCP-V is satisfied with either deletion or reduction, as both result in the elimination of identical features in adjacent vowels — reduction by eliminating vowel place and syncope by eliminating the entire segment.
- Both reduction and syncope will also violate Max(VPlace), because the vowel place features of the underlying segment are eliminated in either case.

- Reduction always occurs when the resulting syllable is closed, and syncope always occurs when the resulting syllable is open.
- Kager (1990) suggests that in Dutch, the schwa does not always bear moraic weight.
  – A weightless schwa can be prevented from occurring in open syllables by a sufficiently high ranking of a constraint requiring syllables to contain at least one mora:

(7) *Weightlessσ
Every syllable must have at least one mora — no weightless syllables.

- In order for *Weightlessσ to force syncope, it must crucially dominate a segmental Max constraint:

(8) Max-V
Every vowel in S_1 must have a correspondent in S_2.

- OCP-V must also rank above Max-V; this ranking both permits and motivates syncope in cases where schwa would appear in a syllable with no coda, creating a weightless syllable:

(9)

/h{v}s+toq'+a/	*Weightlessσ	OCP-V	Max-V
a. hostəq'a	*!		
b. hostoq'a		*!	
c. ☞ hostq'a			*

- In order to prevent dissimilation, Ident(VPlace) must be ranked above Max-V: Ident(VPlace) ≫ Max-V
- With this ranking, any candidate seeking to satisfy OCP-V and *Weightlessσ by dissimilation instead of syncope would be sub-optimal:

(10)

/h{v}s+toq'+a/	*Wtlsσ	OCP-V	Id(VPl)	Max-V
a. hostəq'a	*!		*	
b. hostoq'a		*!		
c. hostaq'a			*!	
d. ☞ hostq'a				*

- With base vowels in closed syllables, *Weightlessσ does not have the opportunity to assign any violation marks, and is inactive. However, because Max(VPlace) is violated whenever Max-V is, a candidate seeking to satisfy OCP-V by syncope in a closed syllable will be harmonically bounded.

(11)

/sn{v}+qlin/	OCP-V	Max-V	Max(VPlace)
a. sniqlin	*!		
b. sniqln		*!	*
c. ☞ sniqlən			*

Broad Correspondence

- The constraint rankings established above make a far too powerful prediction. We expect to see syncope and reduction active wherever adjacent syllables contained identical vowels. However, this is not the case.

(12) **Adjacent vowels in non-reduplicative environments**
a. sajaqa 'washes the hands'
b. c'ilwis 'boy (late teenage)'
c. loloqs 'fire'
d. weget'as 'frog'

- The forms above should be unacceptable under the ranking established thus far.
- It is necessary to restrict OCP effects to reduplicative environments. Cole (1997) discusses this restriction in terms of recoverability.
  – Reduplicated vowels have a unique opportunity to violate faithfulness and identity because they are recoverable, because the original features of the base vowel can be deduced from its correspondent in the reduplicant.

- The generalization that Klamath vowels are permitted to reduce or delete only in reduplicative environments can be explained with broad correspondence (Struijke, 1998), which requires only that each segment of the input must appear *somewhere* in the output.
- Faithfulness constraints, then, are existentially defined.
- Broad correspondence specifically applies to the Input-Output domain.
  – In non-reduplicative environments, the existentially-defined broad correspondents constraints manifest as a traditional correspondence relationship.
  – In reduplicative environments, input segments have multiple correspondents, and two chances to satisfy faithfulness.

(13) Non-reduplication and Reduplicative Correspondence
a. $\begin{matrix} \mathbf{c'}_1 & i_2 & l_3 & w_3 & i_4 & s_5 \\ \mathbf{c'}_1 & i_2 & l_3 & w_3 & i_4 & s_5 \end{matrix}$ b. $\begin{matrix} & & & p_1 & a_2 & g_3 & a_4 \\ p_1 & a_2 & p_1 & a_2 & g_3 & a_4 \end{matrix}$

- Each reduplicated segment essentially has two correspondents in the output; when one deletes, the other can still satisfy broad correspondence.
- The relevant faithfulness constraints for this analysis of Klamath reduction and syncope, existentially defined:

(14) Existential Faithfulness in Klamath Reduplication
∃-Max-V_{IO}
Each vowel in the Input has some correspondent in the Output.
∃-Max(VPlace)$_{IO}$
Each vowel place feature in the Input as some correspondent in the Output.
∃-Ident(VPlace)$_{IO}$
Some Output segment corresponding to an Input segment preserves the vowel place of that input segment.

- These are very high-ranking constraints, and must crucially dominate OCP-V: ∃-Max-V_{IO}, ∃-Max(VPlace)$_{IO}$, ∃-Ident(VPlace)$_{IO}$ ≫ OCP-V
- In non-reduplicative environments, the optimal candidate will violate the OCP to preserve the input.
- In a reduplicative context, this same ranking permits OCP-V to force reduction or syncope.
- These constraints, however, cannot differentiate between the various candidates that satisfy OCP-V. For that, we need to turn to Base-Reduplicant correspondence and faithfulness constraints that are not existentially defined.
- Broad correspondence only applies to the Input-Output domain. Base-Reduplicant identity can be used here to choose between syncope, reduction, and dissimilation in reduplicative candidates that satisfy OCP-V.

(15) Base-Reduplicant Identity in Klamath
Max-V_{BR}
Each vowel in the Base has a correspondent in the Reduplicant.
Max(VPlace)$_{BR}$
Each vowel place feature in the Base has a correspondent in the Reduplicant.
Ident(VPlace)$_{BR}$
Correspondent segments in the base and reduplicant are identical in vowel place.

- These BR-specific constraints maintain the rankings of their more general counterparts: OCP-V, Ident(VPlace)$_{BR}$ ≫ Max-V_{BR} ≫ Max(VPlace)$_{BR}$
- With this ranking, it is once again possible to distinguish between reduction, syncope, and dissimilation. When base vowels are in closed syllables, and *Weightlessσ is not active, reduction will be the optimal choice:

(16)

/sn{v}+qlin/	OCP-V	Id(VPl)$_{BR}$	Max-V_{BR}	Max(VPl)$_{BR}$
a. sniqlin	*!			
b. sniqlan		*!		
c. sniqln			*!	
d. ☞ sniqlən				*

When the base vowel would be in an open syllable and *Weightlessσ has an opportunity to become active, syncope will be the preferred choice:

(17)

/h{v}s+toq'+a/	*Wtlsσ	OCP-V	Id(VPl)$_{BR}$	Max-V_{BR}
a. hostəq'a	*!			
b. hostoq'a		*!		
c. hostaq'a			*!	
d. ☞ hostq'a				*

Positional Faithfulness

- In the reduplicative environments outlined thus far, multiple vowels are candidates for reduction or syncope to satisfy OCP-V: the vowel in the base and the vowel in the reduplicant.
  – Invariably, it is the vowel in the base which is affected, and the vowel in the reduplicant preserves the features of the input.
- The faithfulness rankings we have currently established are unable to make this distinction.
  – Base-Reduplicant correspondence is equally violated by unfaithfulness in either the base or the reduplicant
  – Broad correspondence is not violated at all so long as at least one copy of the vowel remains.
- In prefixes with fixed coda material, in fact, the vowel in the reduplicant would be a more optimal choice — syncope would never be forced by *Weightlessσ, and a Max-V_{BR} violation would be spared in favor of a violation of the lower-ranked Max(VPlace)$_{BR}$.
- Markedness explanations are not sufficient to explain why absolutely every form displaying reduplicative reduction and syncope does so in the base and not the reduplicant.
  – Reduction and syncope occurs with a broad range of syllable structures, and it's unlikely that every configuration is improved by deleting the base vowel.
  – There is insufficient data on Klamath stress to entirely rule out a prosodic motivation, but it would also be unlikely that in absolutely every case the prosodic structure is improved by deleting the base vowel instead of the reduplicant.
  – An analysis based on either syllabic or prosodic markedness would ultimately require some kind of Output-Output Correspondence or Optimal Paradigm (McCarthy, 2005) restrictions to insure sufficient regularity.
- **Positional faithfulness** (Beckman, 1998) provides additional strength for faithfulness restrictions in prominent positions. Root-initial syllables are prominent, and call for additional faithfulness:

(18) Root-Initial Faithfulness (Beckman, 1998)
Identσ$_1$(F)
An Output segment in σ_1 [of the root] and the Input correspondent of that segment must have identical feature specifications.

- Positional prominence is especially important within the context of broad correspondence and recoverability; when a vowel is in a prominent position, it is better suited to carry the features of the input, because its features are more likely to be easily perceived and interpreted than the features of a vowel in a less prominent position.
- (Smith, 2002) suggests that the relevant initial syllable is word-initial, and that root faithfulness is distinct from initial-syllable faithfulness.
  – She argues that word-initial syllables play an important role in early-stage word recognition, and are therefore particularly salient.
- In Klamath, it is the word-initial syllable that retains the underlying features of the reduplicated vowel. It is the word-initial syllable, not the root-initial syllable, whose prominence is relevant to positional faithfulness:

(19) Word-Initial Faithfulness in Klamath Reduplication
Maxσ$_1$-V
In a word-initial syllable, every vowel in S_1 must have a correspondent in S_2.
Maxσ$_1$(VPlace)
In a word-initial syllable, vowel place in S_1 must have a correspondent in S_2.
Identσ$_1$(VPlace)
In a word-initial syllable, a vowel and its correspondent must be identical in place.

- It is necessary here that the positional faithfulness constraints specific to word-initial syllables crucially dominate their counterpart constraints specific to root vowels.
- This ranking insures that the vowel place features of the word-initial syllable (in the reduplicant) will be preserved, at the expense of the vowel place features in the root syllable (in the base):

(20)

/h{v}s+**c**onw+a/	OCP-V	Maxσ$_1$(VPl)	Max(VPl)$_{RT}$
a. hos**c**onwa	*!		
b. has**c**onwa		*!	
c. ☞ hos**c**onwa			*

- Broad correspondence will be satisfied by preservation of input material in the word-initial syllable — the reduplicant — and OCP-V will be satisfied by unfaithfulness in the base, despite its prominence as the root.

Conclusion

- This paper has sought to answer several important questions about reduplicative reduction and syncope in Klamath:
  i. Why does this process occur always and only with reduplication?
  ii. Why is the stem vowel always affected, and never the vowel in the reduplicant?
  iii. What factors govern the distribution of reduction and syncope in these forms?
- Question (i.) was answered by an account of reduplicative reduction and syncope motivated by the OCP, and restricted to reduplicative environments by existentially-defined correspondence.
- Question (ii.) was answered by an account based on positional faithfulness.
- Question (iii.) was answered by the potential weightlessness of schwa, combined with a prohibition on weightless syllables.

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