

foot) brings in phonologically derived extra activity. In open non-final syllables this results in vowel lengthening: /ka.za/ → [ka:.za]. In final syllables, this activity associates to the following consonant, resulting in stress-driven RF (3). (v) Triggers of lexical RF (1) end in a weak root node, which can also fuse with the following consonant.

$$(5) \quad /k/ \begin{cases} 1.5 & \text{---} [k:] & [\text{RF}] \\ 1 & \text{---} [k] & [\#, C_] \\ 0.8 & \text{---} [\chi, x, h] & [V_] \end{cases}$$

Analysis Constraints: DEP[STR]: Assign z violation for every output segment that is associated with y strength and a corresponding input segment that is associated with x strength ($z = y-x$). MAX[STR]: Assign z reward for every activity (x) that is present in the input and is associated to a segment in the output (y) ($z = y$, with $z \leq x$) (Smolensky & Goldrick 2016). ONE!: Assign z violation for every segment that has strength $y > 1$ in the output ($z = y-1$). FULL!: Assign z violation for every segment that has strength $y < 1$ in the output ($z = 1-y$). ONE!-V#: Assign z violation for every final vowel that has strength $y > 1$ in the output ($z = y-1$). WEAK!-C-V_: Assign z violation for every post-vocalic consonant with strength y in the output ($z = y$).

Gorgia: the markedness constrain WEAK!-C-V_ favors an output gradient segment /k_{0.8}/. This is then realized by the phonetics as a lenited variant of /k/ ([χ, x, h], depending on the variety).

| /la'k ₁ asa/ | MAX[STR] ¹ | DEP[STR] | ONE! | FULL! | ONE!-V# | WEAK!-C-V_ | H |
|-----------------------------|-----------------------|----------|------|-------|---------|------------|------|
| <i>weight</i> | w=+20 | w=-8 | w=-3 | w=-2 | w=-6 | w=-7 | |
| a. lak ₁ asa | 1 | | | | | 1 | 13 |
| ☞ b. lak _{0.8} asa | 0.8 | | 0.2 | | | | 15.4 |

Stress-triggered RF: the extra-strength brought by the stress is associated to the initial consonant of WORD₂. The final stressed vowel cannot be stronger than 1, as in (c), because of ONE-V#, therefore the RF candidate (b) is preferred. Even though the context for Gorgia is actually met (d, e), the segmental realization of strength overcomes the need for weak consonants, bleeding Gorgia.

| /tʃi'ta ^{0.5} kara/ | MAX[STR] | DEP[STR] | ONE! | FULL! | ONE!-V# | WEAK!-C-V_ | H |
|--|----------|----------|------|-------|---------|------------|------|
| <i>weight</i> | w=+20 | w=-8 | w=-3 | w=-2 | w=-6 | w=-7 | |
| a. tʃi't:a ^{0.5} kara | 2 | | | | | 1 | 33 |
| ☞ b. tʃi't:a k _{1.5} ara | 2.5 | 0.5 | | 0.5 | | 1 | 38 |
| c. tʃi't:a _{1.5} kara | 2.5 | 0.5 | | 0.5 | 1 | 1 | 32 |
| d. tʃi't:a _{1.5} k _{0.8} ara | 2.3 | 0.5 | 0.2 | 0.5 | 1 | | 34.4 |
| e. tʃi't:a ^{0.5} k _{0.8} ara | 1.8 | | 0.2 | | | | 35.4 |

Conclusion RF-gemination and Gorgia are related to the phonological representation of linguistic elements. This account can explain the articulatory difference between phonematic and derived segments and has the potential for further implementations (synchronic and diachronic variation).

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