Toward a Uniform Moraic Quantity Principle

Introduction. Cross-linguistic variation in the status of CVC for weight-sensitive primary stress presents difficulties for theories of moraic structure attempting to pin down the moraicity of codas (e.g., CV: > {**CVC**, CV} vs. CV: > **CVC** > CV). Previous accounts of this inconsistent weight status (Hyman, 1985; Hayes, 1989; Morén, 2000; a.o.) make incorrect predictions about the moraicity of CVC for other weight-sensitive phenomena, particularly secondary stress (Ryan, 2019, 2020). This paper proposes the Uniform Moraic Quantity Principle as a solution, which captures CVC's flexible weight-status while both maintaining the cross-linguistic moraicity of codas and avoiding the incorrect predictions plaguing the standard variable weight approach.

The data in (1) illustrates primary and secondary stress in Chickasaw (Gordon, 2004a). Primary stress is word-final by default (e.g., (1a-d)), but CV: attracts primary stress when present (e.g., (1e, f)). Thus, the primary stress criterion is CV: > {CVC, CV}. Secondary stress, in contrast, falls on all CV: and CVC syllables, but not on CV. The disparity between the primary and secondary stress scales of Chickasaw is problematic because CVC simultaneously behaves as light (for primary stress) and heavy (for secondary stress). The traditional view of moraic structure treats the moraicity of codas as a language- and context-specific parameter, in which codas sometimes project a mora and other times do not. The data from Chickasaw, however, provides a case in which the variable weight analysis fails to make accurate predictions because two separate weight-sensitive phenomena (primary and secondary stress) treat CVC differently in the same environment.

(1) a) noˌtakˈfa   'jaw'   b) ˌokˌfokˈkol   'a snail'   c) ˌhattaˈkat   'man'
     d) ˌinˌtikˈbaːt. 'sibling' e) taˈlaːˌnomˌpaʔ 'telephone' f) ʃimmaˈnoːˌliʔ 'Seminole'

Proposal. The Uniform Moraic Quantity (UMQ) principle, contra the standard variable weight approach to weight-sensitive stress, requires coda consonants to contribute a mora to the syllable. Thus, the standard assumption that coda moraicity is a language-specific parameterized option is rejected under the approach outlined here since GEN is unable to produce candidates that violate the UMQ. According to the UMQ, CVC syllables are universally bimoraic, leading to a straightforward analysis of the secondary stress criterion in Chickasaw. CV: and CVC are bimoraic and heavy, thereby attracting stress, while CV is monomoraic and light. To account for the light status of CVC for primary stress, on the other hand, I contend that Chickasaw primary stress relies on another metric, separate from distinctions in moraic quantity, to determine syllable weight: moraic *quality*. Moraic quality is defined by the sonority of the segment projecting each mora. Thus, the mora is encoded, not just with quantitative weight from its projecting segment, but with the sonority of that segment as well. As shown by the sonority hierarchy in (2), vocalic moras (μ_V) are the most sonorant and are positioned at the top of the scale, outweighing non-vocalic moras (μ_R and μ_O). Sonorant consonant moras (μ_R) make up the middle tier on the scale. While μ_R are less sonorant and thus qualitatively lighter than μ_V, they are more sonorant and qualitatively heavier than obstruent consonant moras (μ_O), which reside at the bottom of the sonority scale and are lighter than both μ_V and μ_R (e.g. Zec 1995, 2003, 2007, 2011). Moraic quality constraints exploit these sonority distinctions by choosing a point on the scale in between two levels and making a bifurcation. Every mora quality above that bifurcation point is considered heavy, and every mora quality below that bifurcation point is considered light. Rather than using simple differences in mora count to make syllable weight distinctions, the Chickasaw primary stress scale CV: >

(2)

$\mu_V > \mu_R, \mu_O \longrightarrow$

$\mu_V, \mu_R > \mu_O \longrightarrow$

μ_V

μ_R

μ_O

Sonorants
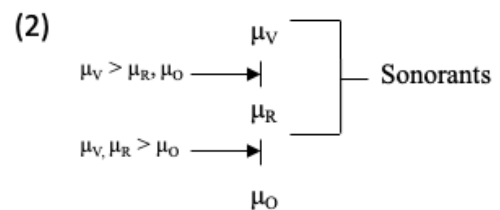
{CVC, CV} uses the *quality* of the moras a syllable contains to classify syllables as heavy or light. The relevant bifurcation point for Chickasaw primary stress is situated between vocalic and non-vocalic moras, resulting in the following weight distinctions in moraic quality: $\mu_V > \mu_R, \mu_O$. A bifurcation between μ_R and μ_O, on the other hand, would result in a weight scale in which all sonorant moras (μ_V and μ_R) are heavy and all obstruent moras (μ_O) are light. The Kwakw'ala (Bach, 1975) primary stress criterion, {CV:, CVR} > {CVO, CV}, provides an example of a language that utilizes a bifurcation between μ_R and μ_O to make syllable weight distinctions.

I employ moraic quality constraints within Hyde's (2007) Nonfinality framework, originally formulated to make syllable weight distinctions in moraic quantity. Non-finality constraints contain three arguments: Non-fin (GCat, Cat, PCat). Entries on a specified level of the grid (GCat) must avoid the final instance of a particular element (Cat) within a given domain (PCat). The particular moraic *quantity* constraint responsible for distinctions in syllable weight for secondary stress in Chickasaw is Non-fin (x_F, μ, σ), which

Figure 1: Metrical Grid Formulations for each syllable type

assigns a violation for every foot-level gridmark that occurs over the final mora of a syllable. As shown in figure 1, CV: and CVC are bimoraic and satisfy the moraic quantity constraint, while CV is monomoraic and violates it.
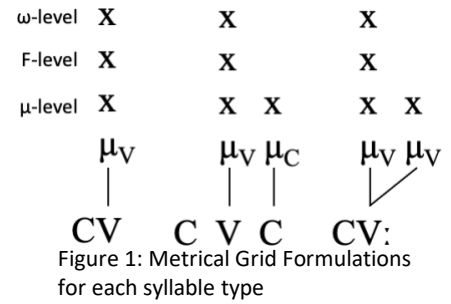
Nonfinality moraic *quality* constraints constitute a subset of Nonfinality constraints in which *Cat* is always a mora of a specified quality. Since primary stress in Chickasaw prefers to avoid syllables with a short vowel, the moraic quality constraint, Non-fin (x_ω, μ_V, σ) – which penalizes primary stress falling over the final vocalic mora of a syllable – must outrank a constraint drawing primary stress to the right edge of the word: Non-fin (x_ω, μ_V, σ) >> x_ω-R. The tableau in (3) demonstrates the efficacy of the UMQ approach in predicting the primary and secondary stress patterns in Chickasaw. Candidate (a) is eliminated because it places primary stress on the word-final CVC instead of pen-initial CV:, thereby violating Non-fin (x_ω, μ_V, σ). Candidate (b), on the other hand, is ruled out because it applies secondary stress to a CV syllable, violating the moraic quantity constraint, Non-fin (x_F, μ, σ). Thus, candidate (w) is optimal.

Alternative. Under the variable weight approach, CVC syllables must be analyzed as monomoraic in (3) to correctly predict primary stress. In the same environment, however, CVC must be bimoraic to attract secondary stress. Thus, the variable weight approach is unable to explain both primary and secondary stress in Chickasaw.

(3)	/ tala:nompaʔ/	NF(x_ω, μ_V, σ)	x_ω-R	NF(x_F, μ, σ)
→ (w)	taˈla:ˌnomˌpaʔ	0	2	0
(a)	taˌla:ˌnomˈpaʔ	1 W	0 L	0
(b)	ˌtaˈla:ˌnomˌpaʔ	0	2	1 W

The Uniform Moraic Quantity principle simplifies moraic theory by eliminating the variable weight of CVC. Furthermore, in conjunction with the UMQ, using both moraic *quantity* and moraic *quality* as metrics for making syllable weight distinctions, the proposal presented here captures the vast majority of weight-sensitive stress systems without incorrectly predicting the moraicity of CVC. Positing the uniform bimoraicity of CVC is not only advantageous for resolving the conflict between primary and secondary stress in Chickasaw, however. For languages in which CVC is light for primary stress, it is often the case that other weight-sensitive phenomena require codas to be moraic as well (e.g., word minimality, syllable template restrictions, tone, etc.). These facts lend further support to the existence of the UMQ.