# Syllables vs. Sequences in Wichita Phonotactics

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The conventional view in recent phonological theorizing, as set out in Itô (1986), is that the tactics of phonological segments can be reduced to licensing conditions on syllable constituents, such as onsets or codas. However, recent research in phonology (Côté 2000; Steriade 2001; Blevins 2004) has questioned this and, instead, proposed that the phonotactics are a result of the local sequences that segments are found in, grounded in either synchronic or diachronic phonetics. I look to broaden the empirical coverage of this debate by examining this question in two of the more general consonantal phonological processes in Wichita, a moribund Caddoan language of the greater Oklahoma area, and will argue that a sequential view offers a better understanding of the phenomena in Wichita. Though my discussion will be couched in Optimality Theory, it in no way depends on any OT-specific assumptions.

The first alternation I will examine is the affrication of /t/. This process is described in the re-write rule in (1):

(1) $t \rightarrow t^s / \_\_ [-\text{vocalic}]$

This process most often occurs next to a consonant, as in (2).

(2) tat$^s$ʔi::s
ta- t- ʔi::s
IND- 1A- see
'I saw him.' (Rood 1976, 217)

It also (historically) occurred word-finally–the phone [t] is absent from word-final position in Wichita and has been replaced by [t$^s$]. The alternation of /t/ → [t$^s$] before both consonants and at the end of words seems to strongly suggest that the alternation is restricted to codas, and thus, should be captured by a condition on codas.

However, I argue that this alternation should actually be handled by a sequential constraint, tV (cf. t → V from Côté 2000), where [t] is only licensed before vowels. Because both word-final and pre-consonantal underlying /t/ do not precede a vowel, surface [t] is not licensed; thus, motivating the alternation and re-capturing the coverage of the coda condition view. Furthermore, *modulo* a particular case of stem faithfulness ([th]), the requirement of this constraint to only allow [t] before vowels can also account for the absence of [t] from non-prevocalic positions in initial consonant clusters.

This treatment receives additional motivation from the phonetics of coronal stops and similar behavior of /t/'s in unrelated languages,

The second alternation to be discussed here is *w*-fortition, described in the re-write rule in (3):

(3) $w \rightarrow k^w / [+\text{consonant}] \_\_$

This alternation happens in stem-initial /w/'s, both within words and across them. This former environment is illustrated in (4):

(4) isk$^{w}$a
i- s- wa
IMP- 2A- go
'Go!' (Rood 1976, 236)

Given the position of the alternations, it appears that the restriction against /w/ should be a restriction on onsets. However, I argue that this, too, should be analyzed with a sequential constraint. The Wichita-internal evidence speaks strongly against an onset restriction, as /w/ and /k$^{w}$/ contrast word-initially *and* word-internally (Poletto 1993), in places that a syllable-based analysis would have to analyze as onsets. Thus, the evidence suggests an analysis which just rules out the ungrammatical consonant-glide clusters should be preferred.

I, instead, propose that the alternation is due to a sonority distance constraint, that Wichita prefers a sharp differential in sonority between a pre-vocalic consonant and a vowel. Such a constraint captures the desideratum above—that consonant-glide clusters, with their low differential in sonority between the cluster-final consonant and vowel, should be bad—while leaving other word-internal onsets alone.

From the affrication and *w*-fortition data, I conclude that syllables are not the relevant place for stating segmental phonotactic constraints in Wichita. However, the data say little about other prosodic categories, and I conclude with some thoughts, with reference to Wichita, on how sequential constraints and prosodic categories may be integrated.

## References


Blevins, Juliette. 2004. *Evolutionary Phonology: The emergence of sound patterns*. Cambridge: Cambridge University Press.

Côté, Marie-Hélène. 2000. "Consonant Cluster Phonotactics: A Perceptual Approach." Ph.D. diss., MIT.

Itô, Junko. 1986. "Syllable Theory in Prosodic Phonology." Ph.D. diss., University of Massachusetts, Amherst. (Published in Outstanding Dissertations in Linguistics, New York: Garland, 1988).

Poletto, Robert. 1993. "The root node and labio-velar hardening in Wichita." In *Proceedings of the Eastern States Conference On Linguistics*, edited by A. Kathol and M. Bernstein, Volume 10, 287–298. Ithaca: Cornell University Department of Linguistics.

Rood, David S. 1976. *Wichita Grammar*. New York: Garland Publishing.

Steriade, Donca. 2001. "Directional Asymmetreis in Place Assimilation: A Perceptual Account." In *Perception in Phonology*, edited by Elizabeth Hume and Keith Johnson, 219–250. San Diego: Academic Press.