The gradient categorical vocalic behavior of syllabic consonants

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INTRODUCTION

Syllabic consonants are often subject to severe phonotactic restrictions and, compared with vocalic nuclei, may be defective in a variety of ways.

They may systematically lack either the onset, or the coda, or both;
or may be confined to specific positions within words.

In some cases, however, syllabic consonants are well integrated into the vowel system.

We show here that this apparently gradient phenomenon,
ranging from highly restricted defective consonantal nuclei (top left) to their full vocalic functionality, including stressability, lengthening under stress, and participation in vocalic length and tone contrasts (towards bottom right),
is the result of a set of categorical binary choices.

ASPECTS OF A TYPOLOGY OF SYLLABIC CONSONANTS

Cross-linguistic variation in syllabic consonants:

1. Classes of syllabic consonants
   a. Liquids (if lateral then also rhotic)
   b. Nasals
   c. Sibilants
   d. Sonorants
   e. Nasals + sibilant(s)
   f. Liquids + sibilant(s)

2. Syllables with consonantal peak
   a. Open unstressed
   b. Restrictions on onsets and codas
   c. Stressed/word peak
   d. Length
   e. Tone

Syllabic consonants are orderd on a scale from consonantal to vocalic.

Syllabicity/vocalicity hierarchy is flexible, ordering either sibilants, nasals or liquids first.

Syllables with C-nuc restrictions:
- No stress
- Not word-initial
- Not word-final
- No coda
- No onset
- No complex margins

CHIPAYA SYLLABIC SIBILANTS

Syllable structure:
C, V, ... CCV:CC, CCCVCCC
Only sibilant syllabic.
Consonantal syllables: No onset, only stop coda

ap.ʂ̌.ki.ča	'he is following, they say'
ik.ʂ	'womb'
thoht.st.ḳal.ča	'he has surely fallen'

"The sibilant nucleus syllable [...] is postulated for the following reasons: (a) the timing of Sn follows the same pattern as vowel-nucleus syllables; (b) there is a peak of sonority on Sn; (c) Sn is preceded by juncture and receives an audible attack." (Olson, p. 302).

Uru-Chipaya; Olsen (1967)

BAINING STRICT PHONOTACTICS

Baining: Strict phonotactics

Ç-based syllables have an obligatory simple onset and may have a simple coda.

CÇ syllables have /s, n, r, l/ in the nucleus and /t, r, m/ in the onset.

CÇC syllables have /r, l/ in the nucleus, /d, t, r, ŋ/ in the onset, and /k, s, m/ in the coda.

/ts/	'eat'
/dlm/	'know'

(Kakat, Qaqet) Baining-Taulil; Papua New Guinea; Parker & Parker (1974)

NAVAJO DISTRIBUTIONAL RESTRICTIONS

Syllable shape: (C)V(V)(C); ŋ(C); Ç
"Very frequent": CV, CVV, CVC, CVVC, ŋ, ŋC
"Occur rarely": V, VV, ʂ, ʂ̌, ž, ɬ
Navajo syllabic nasals bear tone.

Distribution
- ŋC word-initially and medially
  ŋ̀ž.ɬɬ.j́éé? 'he has put them down'
  xáà.j̨ì?.ʂ 'up to what point'
- ʂ only word-finally, after CV? or CVV?:
  dį́į?.s.ḳá 'four days have passed',
  ʔà.dà?.ž.nìì.ɣį́ɬ 'they began to eat',
  ḱàì?.ɬ.bá.hí 'gray willows'

Na-Dené, Athapaskan; Sapir & Hoyer (1967), McDonough (2003)

TEHIT PLACE-DEPENDENT SYLLABIC NASALS

Word-initial nasals are syllabic if homorganic with following C, otherwise V epenthesis,

a. Homorganic NC clusters

/m-bait/	[m̩bájt]	*[məbájt]	'she plays'
/n-dehe/	[n̩déhe]	*[nədéhe]	'you fence it off'
/n-noq/	[n̩nóq]	*[nənóq]	'you know'

b. Heterorganic NC clusters

/n-bait/	*[n̩bájt]	[nəbájt]	'you play'
/m-dehe/	*[m̩déhe]	[mədéhe]	'we fence it off'

c. NF clusters

/n-ɸolo/	[n̩ɸólo]	[nəɸólo]	'you chop'
/m-sat/	[m̩sát]	[məsát]	'she cuts'

(Imyan dialect, West-Papua, Bird's Head; Hesse (1995), Cooper (2015)

YUROK VOCALIC RHOTICS

Yurok vocalic rhotic: syllabic with length contrast

Vowels
Short: /i, e, a, o, u, r [ɚ]/
Long: /i:, a:, o:, u:, r:/

wr.hlry	'tail'
tr:.kun	'head of fish'
mrw.prh	'lunch, packed food'
trkw.trm	'dentalium shell'
'r.krhl	'knee'
nrh.pry	'berry'

Algic; Robins 1958, Blevins (2003a,b)

LENDU SIBILANTS WITH CONTRASTIVE TONE

Lendu syllabic sibilants and rhotics: both with length contrast; sibilants with contrastive tone

sz	'to shoot'	kazź	'fire'
zz	'bowels'	mbazz	'tobacco'
tszź	'cow'	rítsž	'thing'
dzz	'ground, floor'	nyúdzž	'food'
ndzz	'to call'	dzz'da	'tear'
ndzž	'yesterday'	idzz	'drum'

mbrr	'arrow'
brr	'to jump'
ndrr	'goat'

(Balendru) Nilo-Saharan, Central Sudanic; Tucker (1940/1967), Lojenga (1989), Demolin (2002)

SLOVAK VOCALIC LIQUIDS

Syllables with liquid nuclei
sRna 'deer', kRv 'blood',
jabĽko 'apple', vĽk 'wolf'
Syllabic R, L may not be
word-initial: *Rtut → rtut 'mercury'
*Ĺkat → ĺkat 'moan'
word-final: *liezĽ → liezol 'crawled' (cf. liezla)
Syllabic R, L exhibit length contrast
(also in Vs, krik 'shout' vs. kríik 'bush')
sRna 'deer' vs. vŔRba 'willow'
kŔčma 'inn' vs. kŔŘč 'cramp'
Syllabic R, L participate in Rhythmic Law
Vowels: ruk-aach vs. traav-ach
Liquids: sRn-aach vs. vŔRb-ach
vLn-aach vs. dĽĽ-ach
Kenstowicz&Rubach (1987), Rubach (1993)

SERBIAN VOCALIC RHOTIC

Syllables with rhotic nuclei
sRce 'heart'', kRv 'blood',
vRt 'garden', četvRtak 'Thursday'
bRkovi 'moustach', kRzno 'fur'
Rt 'promontory, Rdja 'rust'
Syllabic R may not be word-final
*vetR → vetar 'wind'
*dobR → dobar 'good'
Syllabic R exhibit length contrast (also found in vowels, rad 'willing'' vs. raad 'work')
sRna 'silver' vs. sŔRna 'deer'
gRma 'bush' vs. gŔRmi 'thunders'
Syllabic R can bear pitch accent (tone+stress)
$\acute{s}R_H ce$; $\grave{R}_H dja$

Zec (2012)

SENOUFO VOCALIC NASALS

In Senoufo, nasals are the only type of syllabic consonants.

Syllabic nasals pattern with vowels by
- bearing a tone
- being stressable
- participating in length contrast

Stressed syllabic nasals

ma-dege	['madege ~ 'Ndege]	'corn'
pemipã	[pe'Mpã ~ pe'mɪpã]	'they came'
nyũ-dõlõ	['ɲũdõnõ ~ 'Ndõnõ]	'hat'

Long syllabic nasals
M: 'yes'
Cf. fã 'to run' vs. fã: 'to build'

Niger-Congo, Mills (1984: 91-104)

APACHE VOCALIC NASALS

In Chiricahua Apache, both the lateral and nasals are syllabic (there is no rhotic)

Syllabic N
- occurs word initially, medially, and finally
  N.ca 'it is big'
  N.N.ʔa 'you put a round object down'
  nah.či.ho.ga.ɬN 'he who keeps coming toward us'
- bears tone
- participates in a length contrast (cf. to 'water' vs. to: 'hundred'
  N:.gis 'you are lazy'; na.N:.ʔa 'you pick up a round object' vs. N.N.ʔa (see above)

Syllabic L
- is restricted to word final position,
- does not bear tone
- does not participate in length contrast

Athapaskan, Hoijer (1963:60-63)

FRAGMENTAL ANALYSIS SKETCH

Positional restrictions: *Wd-Init-Ç, *Wd-fin-Ç >> SSP (Zec 2012)

Syllabicity and stress:
*Nuc/O, *Nuc/O,Sib, *Nuc/O,N, *Nuc/O,L
+
*ˈNuc/O, *ˈNuc/O,Sib, *ˈNuc/O,N, *ˈNuc/O,L
= only subset of syllabic Cs can be stressed.

Contrastive length in consonants: O > VcdO > Son > V = FaithPμ FaithCμ (e.g., Morén 2001)
Can't be at work in nucleus typology.
- Syllabic C length contradicted by contrastive C length.
- Syllabic C length inconsistent with constraints on syllabicity and stress.

Contrastive length in the nucleus: FaithV(μ), FaithNuc(μ), FaithˈNuc(μ) *Long

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