

Whispered Words in Bella Coola: Fact vs Fiction

Hank Nater^{1,*}

¹Independent researcher

Abstract

A few assertions made by Gloria Mellesmoen (2021) in an Optimality Theory-based article on obstruent clustering in Bella Coola (*Nuxalk*) are disputed. At issue are: (i) failure to cite all-stop and all-fricative words; (ii) exclusion of stops as potential nuclei and ambiguous views on the status of affricates; (iii) absence of a procedure to determine nuclearity of fricatives in certain environments. It is also shown that (iv) obstruent clustering is an areal trait shared with Rivers Inlet (*Oowekyala*). Agreeing with Newman (1947), I maintain that Bella Coola is non-syllabic.

Introduction

The oldest written record of the Bella Coola (*Nuxalk*) language was created in late July 1793, when Alexander Mackenzie logged twenty-two native words [19] while exploring the Bella Coola valley [14]. Mackenzie was, of course, familiar with /χ/ in most instances, but he had a difficult time with other obstruents and consonant clusters, inserting vowels where none actually existed (in “syllables” underlined by me), e.g. <Zimilk> = *smlk* ‘fish’, <Kietis> = *χic* ‘axe’, <Clougus> = *qluq’s* ‘eye’, <Dichts> = *t’χts* ‘(it is a) stone’ (Nater, 2020, p. 187). Over a century later, Franz Boas, who had earlier cited <t’χt> = *t’χt* ‘stone’ and <χq> = *lkw* ‘big’ [4], submitted a paper on voiceless words. But “common sense” still prevailed:

This language was the subject of a paper by Boas half a century ago, which is said to have been rejected by the editor of a German philologic journal on the grounds that, as “everyone knows,” it is impossible to have words without vowels.

[7]

Post-Boas, Bella Coola obstruent clusters and all-obstruent words continued to challenge scholars: [20], [7], [1, 2], [6], to name a few. A more recent approach is adopted by [15], who adheres to a “Good Enough Nucleus Hypothesis” (hereafter GENH) while deliberating nuclear potential for Bella Coola fricatives:

Every word has at least one syllable, and in words with a single syllable, anything equal or greater in sonority to a fricative may be in the nuclear position.

[15]

However, in regards to syllabication, this statement does no justice to voiceless words that contain, or consist of, two or more consecutive fricatives. Also, the mandate that stops cannot be nuclear [15] conflicts with the presence of numerous all-stop words and roots, and violates the rule whereby “every word has at least

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Corresponding author:

Hank Nater, Independent researcher

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one syllable”.

In this paper, then, I aim to prove that it is not always feasible to bring unusual linguistic traits in line with currently acceptable theories on alleged linguistic universals. First, the Bella Coola phoneme inventory (and a phantom schwa) are dealt with, and two-member voiceless clusters are identified and categorized. Next, I present lists of voiceless stems and roots, and point out the basic flaws of GENH. I then show that presence of long obstruent clusters is shared with Oowekyala (although these languages differ substantially on the phonotactic level). I conclude that Bella Coola is essentially non-syllabic. Topics are treated sectionally in the following order: (2) phonemes and phonotactics; (3) supporting data; (4) area and diachrony; (5) conclusions.

Phonemes and phonotactics

The phonemes of Bella Coola are as shown in Table 1 below. Per centum distribution of phonemes across the entire morpheme inventory [16] is indicated in parentheses. Note, in particular, the high numbers for /s, ʔ, i, u, a/ vs the very low frequency of /h/, and the prevalence of fricatives and sonorants over stops (plosives). Aspiration of /p/ and /t/, and affrication of all back plain stops, in non-prevocalic environments are treated in Nater (1984, p. 4). Note that /pʰ, tʰ, qʰ, etc./ = /p̚, t̚, q̚, etc./; /kʷ, qʷ/ = /k̚ʷ, q̚ʷ/; #ʔR = #ʔR (where # = continuant or morpheme boundary, R = sonorant); /ʎ/ = /ʎ̚/; /χʷ/ = /χ̚ʷ/.

Mellesmoen’s addition of /ə/ (p. 228) is baseless, because schwa is not phonemically distinctive: it appears (1) predictably in sonorant clusters and XNX, (2) marginally in PNV, and (3) never in SNV [16]. Thus, we note that /ə/ is in the boxed PNV portion of </p̚k̚əm̚k̚əmi/ ‘mosquito (DIM)’> not just **quite reduced** (p. 233, fn. 7), but unsurprisingly **absent**: one hears [...cʰm̚] (not *[...cʰm̚]), where glottal release coincides with onset [lip closure] of [m].

Table 1. Bella Coola phoneme inventory

		O B S T R U E N T			S O N O R A N T	
		P L O S I V E		FRICATIVE	CONSONANTAL	VOCALIC
		PLAIN	EJECTIVE			
F R O N T	LABIAL	/p/ (2.68)	/pʰ/ (0.56)		/m/ (3.18)	/m̚/ (1.81)
	DENTAL	/t/ (4.75)	/tʰ/ (1.04)		/n/ (3.99)	/n̚/ (0.92)
	ALVEOLAR	/c/ (3.01)	/cʰ/ (1.78)	/s/ (8.13)		
	LATERAL		/ʎʰ/ (0.95)	/ʎ/ (4.75)	/l/ (3.97)	/l̚/ (0.85)
	PALATAL	/k/ (2.39)	/kʰ/ (1.48)	/x/ (1.65)	/y/ (2.45)	/i/ (8.12)
B A C K	UVULAR	/q/ (1.61)	/qʰ/ (1.38)	/χ/ (2.58)		
	VELAR ROUNDED	/kʷ/ (1.67)	/kʷʰ/ (0.86)	/xʷ/ (1.17)		
	UVULAR ROUNDED	/qʷ/ (1.24)	/qʷʰ/ (1.02)	/χʷ/ (1.44)	/w/ (1.86)	/u/ (6.49)
L A R Y N G A L		/ʔ/ [ʔ] (4.20)			/h/ [h̚] (0.16)	/a/ (15.84)

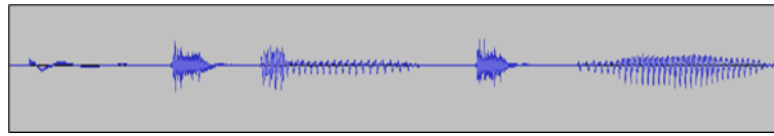


Figure 1. Spectrogram of pk'mk'mi [phc'ɪmc'ʔmɛ] 'small mosquito' (FirstVoices, Audiotonic)

In order to give the reader an idea of the settings in which voiceless clusters exist, I list two-member clusters in charts based on [16]. Coding and patterns are: (a) cells that would have accommodated avoided clusters are greyed out; (b) unpredictable absence is marked as —; (c) exceptional (hypothetically avoided) sequences are boxed; (d) clusters found only in words containing one or more vocalic sonorants are preceded by an asterisk;

- (e) {homorganic front stops} and {plain front stop + ejective front stop} clusters are avoided:
- (f) {plain back stop, /x/, /χʷ/ + ejective front stop} clusters, except {/q/ + ejective front stop} and boxed clusters, are avoided:

Table 2. Front+front voiceless clusters

	-p	-p'	-t	-t'	-c	-c'	-s	-ʃ'	-l
p-			pt		*pc		ps		pł
p'-			*p't		p'c		p's		p'ł
-									
t-	tp				tc		*ts		tł
t'-	*t'p				t'c		t's		—
-									
c-	cp		ct				cs		cł
c'-	c'p		*c't				c's		c'ł
-									
s-	*sp	sp'	st	*st'	sc	sc'	*ss	sʃ'	sł
ʃ'-	ʃ'p		*ʃ't		—		*ʃ's		ʃ'ł
-									
l-	lp	lp'	lt	lt'	*lc	lc'	—	—	ł

Table 3. Back+front voiceless clusters

	-p	-p'	-t	-t'	-c	-c'	-s	-ʃ'	-l
k-	kp		kt		*kc		ks	*kʃ'	kł
k'-	*k'p		*k't		k'c		k's		k'ł
x-	xp		*xt		*xc	*xc'	xs		xł
q-	qp	*qp'	*qt	qt'	qc	qc'	*qs	qʃ'	qł
q'-	q'p		*q't		*q'c		q's		q'ł
χ-	χp	χp'	χt	*χt'	χc	*χc'	χs	χʃ'	χł
kʷ-	kʷp		*kʷt		*kʷc	kʷc'	kʷs	kʷʃ'	kʷł
kʷ'-	kʷ'p		*kʷ't		—		kʷ's		kʷ'ł
-									
xʷ-	xʷp	xʷp'	*xʷt	xʷt'	xʷc	xʷc'	*xʷs	xʷʃ'	*xʷł
qʷ-	—		qʷt		*qʷc		qʷs		qʷł
qʷ'-	qʷ'p		—		—		qʷ's		qʷ'ł
-									
χʷ-	—		χʷt		*χʷc		χʷs		χʷł

(g) {/p'/ + back obstruent} clusters except /p'x/ and /p'χ^w/ are avoided:

(h) back+back obstruent clusters except xk^w, χk^w, k^wq^w are homorganic, while {/x^w/, /χ^w/ + back obstruent} and {/x/ + back obstruent except /k^w/} clusters are avoided:

Table 4. Front+back voiceless clusters

	-k	-k'	-x	-q	-q'	-χ	-k ^w	-k ^w '	-x ^w	-q ^w	-q ^w '	-χ ^w
p-	*pk	*pk'	px	*pq	*pq'	*pχ	*pk ^w	—	*px ^w	—	pq ^w '	—
p'			p'x									p'χ ^w
t-	*tk	tk'	tx	*tq	tq'	tχ	tk ^w	tk ^w '	tx ^w	tq ^w	tq ^w '	*tχ ^w
t'	*t'k		—	t'q		t'χ	t'k ^w		t'x ^w	*t'q ^w		*t'χ ^w
c-	*ck	ck'	*cx	cq	cq'	cχ	ck ^w	*ck ^w '	cx ^w	cq ^w	—	*cχ ^w
c'	c'k		*c'x	c'q		c'χ	*c'k ^w		*c'x ^w	*c'q ^w		c'χ ^w
s-	sk	sk'	sx	sq	sq'	sχ	sk ^w	sk ^w '	sx ^w	sq ^w	sq ^w '	*sχ ^w
λ'	*λ'k		—	λ'q		λ'χ	λ'k ^w		λ'x ^w	—		*λ'χ ^w
l-	*lk	lk'	lx	lq	lq'	lχ	lk ^w	lk ^w '	lx ^w	*lq ^w	lq ^w '	lχ ^w

Table 5. Back+back voiceless clusters

	-x	-q	-q'	-χ	-k ^w	-k ^w '	-x ^w	-q ^w	-χ ^w
k-	kx								
k ² -	k'x								
x-						*xk ^w '			
q-				*qχ					
q ² -				q'χ					
χ-	*χ _q	*χ _{q'}	*χχ	*χ _{k^w}			*χq ^w	*χχ ^w	
k ^w -							k ^w x ^w		
k ^w '-							k ^w 'x ^w	*k ^w 'q ^w	
q ^w -								q ^w	
χ ^w -									q ^w 'χ ^w

Supporting data

Data presented in 3.1-3 appear in a practical orthography in Nater (1990), where ts = /c/, ts' = /c'/, lh = /l/, tl' = /lχ'/, c = /x/, cw = /x^w/, x = /χ/, xw = /χ^w/, 7 = /'/. Throughout 3.1-3, tr. = transitive verb.

Words and roots containing stops only

The data displayed further below contradict Mellesmoen's claim that there is only one all-stop root, viz √tp 'spotted' (which she, relying on 2021 FirstVoices data rather than [17], cites as a free form). Mellesmoen briefly ponders affricates as potential nuclei (p. 230), but then imposes a restriction: "For a narrower scope ...". Regardless, she does not abide by this restriction, having already decided that tp is the one and only all-stop word (Table 1 and comments thereafter). It is Mellesmoen's foregone conclusion that affricates (which she does not consider stops) are indeed potential nuclei, as implied by

Table 1. Count of obstruent-only words on FirstVoices

		Words
Do Not Meet Criteria		1455
Meet the Criteria	Have a Fricative or an Affricate	45
	Only Stops	1
	Other	5

“Have a Fricative or an Affricate” in her Table 1. I quote:

From a total of 1506 words on FirstVoices, there were only a total of 51 words that fit the definition of an OBSTRUENT-ONLY word. The break down is shown in Table 1.

[...] This leaves a single obstruent-only word that is comprised only of stops (*tp* ‘spotted’). [...] While virtually every word in Bella Coola has at least one [+continuant] segment, and fricatives [*sic*] may be naturally paired with fricatives, rather than stops, this involves larger questions pertaining to the nature of affricates that are beyond the scope of the present paper. For a narrower scope and due to a small number of OBSTRUENT-ONLY words without fricatives, this paper focuses on fricatives as potential nuclei and leaves the investigation of affricates for future study. [...] The distributional patterns described in Section 2.2 show that Bella Coola allows fricatives, but not stops, in a nuclear position.

[15]

Below, entries that contain none of the affricates /c/, /cʰ/, /ʎ/ are rendered in boldface.

- | | |
|--|---|
| (1) ck ^w ‘heavy’ | (2) cp (tr.) ‘wipe’ |
| (3) cq (tr.) ‘pierce’ | (4) cq’ (tr.) ‘grab, pull, tear’ |
| (5) cq ^w (tr.) ‘start on something’ | (6) c’k (tr.) ‘fix, prepare’ |
| (7) c’kt ‘arrive’ | (8) c’p ‘stuck, blocked’ |
| (9) kp ‘each, all, every’ | (10) k’c (tr.) ‘chop, cut with axe’ |
| (11) k ^w ʎ’ (tr.) ‘put in place’ | (12) k ^w p ‘straight, right’ |
| (13) k ^w pt ‘become waterlogged’ | (14) ʎ’k ^w (tr.) ‘gather (tiny objects)’ |
| (15) √ʎ’q ‘protrude’ | (16) p’c (tr.) ‘hold underwater’ |
| (17) qc (tr.) ‘pass on, transmit’ | (18) qʎ’ ‘trip, stumble’ |
| (19) √q’p ‘dull’ | (20) q ^w t ‘crooked’ |
| (21) q ^w p ‘bare, empty’ | (22a) √tp (tr.) ‘spread, stretch’ |
| (22b) √tp ‘spotted’ | (23) tk’ ‘sticky’ |
| (24) tk ^w ‘dirty’ | (25) tk ^w ’ (tr.) ‘dig up’ |
| (26) tq’ ‘arrive by boat, land’ | (27) tq ^w ’ (tr.) ‘remove fur from hide’ |
| (28) t’c (tr.) ‘knock, strike, shatter’ | (29) t’k ^w ‘bleed’ |
| (30) t’q (tr.) ‘spread on surface’ | |

¹P = any stop but /c/, N = front sonorant, S = /c/ or fricative, V = vocalic R, X = obstruent or word boundary.

Words and roots containing stop(s) and fricative(s)

It is the large inventory of voiceless Bella Coola words and roots containing at least one stop and one fricative that seems to have inspired GENH in the first place. However, making a GENH-based decision on syllabicity is problematic where two consecutive fricatives appear within a word, as marked in boldface below.

- | | |
|--|---|
| (31) cł (tr.) ‘pull, pluck’ | (32) cx ^w ‘dark’ |
| (33) cχ (tr.) ‘drip on’ | (34) c’ł (tr.) ‘cover, shelter’ |
| (35) c’s ‘loud’ | (36) √c’χ ‘true’ |
| (37) c’χ ^w ‘white’ | (38) kł (tr./itr.) ‘fall, drop’ |
| (39) kłx ‘awake’ | (40) ks (tr.) ‘pull’ |
| (41) kx (tr.) ‘draw a line on something’ | (42) k’łt (tr.) ‘brace, support’ |
| (43) k’x (tr./itr.) ‘see, look at’ | (44) k ^w ł (tr.) ‘crack, split’ |
| (45) k ^{ws} ‘rough’ | (46) k ^{wst} ‘body surface’ |
| (47) k ^{wxw} (tr.) ‘fit, match’ | (48) k ^w ł (tr.) ‘pour out, fill with water’ |
| (49) k ^w s ‘engaged, be dating’ | (50) λ’ł ‘dry’ |
| (51) √λ’χ ‘rattle, crackle, sparkle’ | (52) łc’ (tr.) ‘hold or press down’ |
| (53) łk’ (tr.) ‘pull off’ | (54) łk ^w (tr.) ‘pass one’s hand through sth.’ |
| (55) łk ^w ‘big’ | (56) łp (tr.) ‘fill up’ |
| (57) łq ‘wet’ | (58) łq’ (tr.) ‘slap’ |
| (59a) łq ^w (tr.) dig up, uproot’ | (59b) łq ^w ‘fade’ |
| (59c) √łq ^w ‘sob’ | (60) √łt’ (tr.) ‘pry off, pull with hook’ |
| (61) łχ ^{wt} ‘go through a passage’ | (62) płt ‘thick’ |
| (63) ps (tr.) ‘shape. mold’ | (64) psx (tr.) ‘train, educate’ |
| (65) px (tr.) ‘squeeze water out of string’ | (66) p’łt ‘warm’ |
| (67) p’s (tr.) ‘bend’ | (68) p’x ‘crabapple’ |
| (69) p’χ ^w łt ‘bunchberries’ | (70) qł (tr.) ‘cause pain to’ |
| (71) q’łk ^w (tr.) ‘fix up’ | (72) q’łp ‘balsam fir’ |
| (73) q’pst (tr.) ‘taste, sample’ | (74) q’s ‘tight, intense’ |
| (75a) q’χ ‘rank, rancid’ | (75b) q’χ (tr.) ‘carve’ |
| (76) √q ^w sk (tr.) ‘wind string on spool’ | (77) q ^w ł ‘laugh’ |
| (78) √q ^w s ‘leak, ooze’ | (79) q ^w χ ^w (tr.) ‘move’ |
| (80) sc’ ‘disperse, scatter’ | (81) sc’q ‘animal fat’ |
| (82) scl ‘frost’ | (83) sk’ (tr.) ‘scrape, rake, comb’ |
| (84) sk’s ^t ‘charcoal’ | (85) sk’x ‘black’ |
| (86) sk ^w ’ (tr.) ‘undo, untie’ | (87) sk ^w c’ ‘wrinkled’ |

²Found in kλ’i ‘short’, ’Ayxc’mqa ‘a woman’s name’, sk^wc’ ‘wrinkled’, k^wλ’ (tr.) ‘put in place’.

- | | |
|--|--|
| (88) sk ^w p (tr.) ‘wet, moisten’ | (89) sλ ^w k ^w ‘wart’ |
| (90) slq ^w ‘dried barbecued salmon’ | (91) sp ^w (tr.) ‘hit with a stick’ |
| (92) sq ^w (tr.) ‘cut, tear’ | (93) sq ^w sk ‘saskatoon berry’ |
| (94) sqc ^w ‘sand, gravel’ | (95) sq ^w ‘fly, jump’ |
| (96) sq ^w ł ‘fishbone’ | (97) stq ^w ‘mud’ |
| (98) stx ^w c ‘cottonwood buds’ | (99) √sx ^w λ ^w ‘inadequate’ |
| (100) sxc ^w ‘berry sprouts’ | (101) sxp ^w (tr.) ‘tie up’ |
| (102) tł ‘strong’ | (103) tx (tr.) ‘cut with a blade’ |
| (104) tχ (tr.) ‘carve’ | (105) t ^w s ‘salty’ |
| (106) t ^w x ^w (tr.) ‘brush, sweep’ | (107) t ^w χt ‘stone, rock’ |
| (108) xp = px | (109) x ^w c (tr.) ‘discharge, remove, unpart’ |
| (110) x ^w p (tr.) ‘untangle, try to free’ | (111) x ^w p ^w (tr.) ‘unhook’ |
| (112) x ^w t ‘collapse’ | (113) χt ‘brittle’ |
| (114) √χλ ^w ‘incomplete’ | (115) √χp ^w (tr.) ‘permeate, penetrate’ |

The boldfaced entries beg the question of how Mellesmoen would decide which fricative(s) is/are nuclear, e.g.:

- Should *psx* (tr.) ‘train, educate’ be parsed as /p^wsx/ or /psx^w/?

Words and roots containing fricatives only

Below I list words and roots that consist entirely of fricatives. Note recurrence of front+back and back+front sequences.

- | | |
|---|---|
| (116) lx ^w (tr.) ‘spur, incite’ | (117) √tχ ‘negative, opposed’ |
| (118) √tχ ^w ‘energetic, enthused’ | (119) sx ‘bad’ |
| (120) sxł ‘afterbirth’ | (121) sx ^w (tr.) ‘burn, set on fire’ |
| (122) sχ (tr.) ‘scrape, plane’ | (123) √xs ‘all, whole, entire’ |
| (124) χs ‘fat, fatty’ | (125) √χł ‘lack, be deprived of’ |
| (126) √χ ^w ł (tr.) ‘surpass, exceed’ | (127) χ ^w s (tr.) ‘oil, grease’ |

Again, Mellesmoen does not show us a procedure for determining nuclearity, and one might ask, for instance:

- Should *sxł* ‘afterbirth’ be parsed as /sxł/, /sxł^w/, /sxłł/, or /sxłł^w/?

Area and diachrony

³The two exceptions are p^wx ‘crabapple’ and p^wχ^włt ‘bunchberry’. p^wx has no known etymology, while p^wχ^włt (dissimilated */p^wχ^w-łp/?) may be a blend of older *p^wuq^w(ay) ‘a shrub’ (Kuipers, 2002, p. 81) and Kwakwala √pq^w ‘to be flat on s.th.’ (Lincoln & Rath, 1980, p. 69) and/or Heiltsuk √ph^w ‘to change colours (in the fall)’ (Lincoln & Rath, 1980, p. 70).

⁴Rows and columns that accommodate non-existent clusters only are excluded in Table 5. xk^w, χk^w, k^wq^w are unique clusters found in resp. s^wixk^wx^w ‘bushtail rat’, ’awanaayk^w ‘raft’ and K^wq^wla ‘Clayton Falls’. Of these, s^wixk^wx^w is likely based on Proto-Salish *k^wax^w ‘rat, mouse’ (Kuipers, 2002, p. 51), while the other two surely have North Wakashan origins: Haisla hawanaq^wak^w ‘loaded on top (said of the canoes covered with boards)’ (Lincoln & Rath, 1986, p. 121), resp. Heiltsuk √k^whq^w ‘?’ (in k^wik^waq^wχ^wława ‘lichen’ (Lincoln & Rath, 1980, p. 292).

Long obstruent clusters and voiceless words also exist in two North Wakashan subdialects that are geographically close to Bella Coola (Figure 2): Heiltsuk (Bella Bella, Wáglisla) and Oowekyala (Rivers Inlet). Some Heiltsuk voiceless clusters and words [10] are:

- (128) tɬxɬní ‘owl’
- (129) tɬxstú ‘bulging eyes’
- (130) tɬxʷsɬʷáqà ‘to jump over s.th.’
- (131) tɬkʷ ‘flashlight’
- (132) qqs ‘eye’
- (133) ʷxɬs ‘cross-piece of a canoe’

While Heiltsuk is tonal, Oowekyala, like Bella Coola, lacks distinctive stress or tone [12]. However, Oowekyala differs considerably from Bella Coola on the phonemic-phonotactic level. In re long-standing contact, [4] states that South Bentinck and Rivers Inlet were connected via a frequently used overland route, as reiterated by [8]:

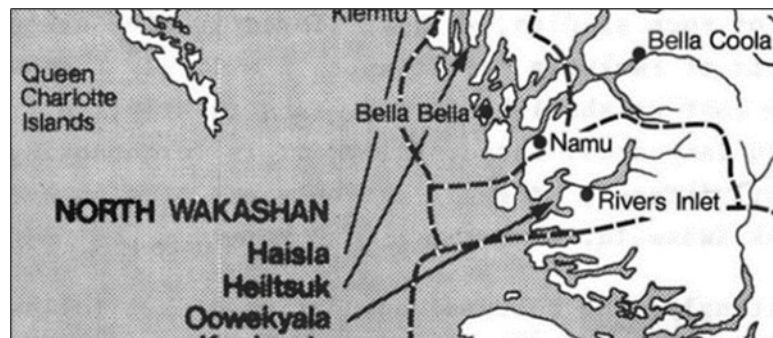


Figure 2. Bella Coola and North Wakashan [12]

Table 6. Voiceless words copied from Oowekyala [12]

List #	Bella Coola	Oowekyala
28	tʰc (tr.) ‘knock, strike’	√ts ‘to hit with a stone’
40	ks (tr.) ‘pull’	√ks ‘to push or motion away with the arm’
44	kʷɬ (tr.) ‘crack, split’	√kʷɬ ‘to collapse, become separated, disintegrate’
67	pʰs (tr.) ‘bend’	√pʰs ‘dented, to bend, to flatten’
73	qʰpst (tr.) ‘taste’ (* /qʰp-st/)	√pʰq ‘to taste’
78	√qʷs ‘leak, ooze’	√qʰs ‘to drizzle’
97	stqʷ ‘mud’	√tqʷ ‘covered with dirt, dust, soil’

[...] the Oowekeeno at the top of Owikeno Lake had regular contact with the Nuxalk of South Bentick Arm, and intermarriage between the two tribes was not infrequent (McIlwraith 1948). [...] The extremely rare consonant clustering property for which Nuxalk is notorious [16, 1] is also found in Oowekyala [...]

⁵North Wakashan has aspirated stops in addition to plain (often phonetically voiced) and ejective ones, as well as /ɬ/ and /ʷɬ/. See Howe (2000, pp. 9-15) for “degenerate” syllables and schwa epenthesis in Oowekyala.

[8]

Some voiceless words are copies of Oowekyala roots that are themselves voiceless:

Other voiceless words derive from $**C_1VC_2$ ($> *C_1\check{V}C_2 > C_1C_2$). In Table 7, Salish data are from [11] Kwakwala data from Lincoln and Rath (1980), Lillooet data from [21], Sechelt data from [3],

Table 7. Salish and areal origins

List #	Entry	Etymology or cognate(s)
(1)	ck ^w 'heavy'	PS *cək ^w 'to pull (out), drag'
(3)	cq (tr.) 'pierce'	PS *ciq 'to dig, stab'
(8)	c'p 'stuck, blocked'	PCS *c'ap 'to derange, interrupt'
(12)	k ^w 'p 'straight, right'	PS *k'wəp 'straight'
(14)	λ'k ^w (tr.) 'gather (tiny objects)'	UCh √λ'ək ^w 'to pick (up), peck'
(15)	√λ'q 'protrude'	PS *λ'aq 'to protrude'
(22 _b)	√tp 'spotted'	Via *tup < Kw √tup 'speck, dot'
(26)	tq' 'arrive by boat, land'	PS *t'aq' 'to cross over'
(30)	t'q (tr.) 'spread on surface'	Ts t'aq 'flatten', PIS *t'əq 'put down, pile', NW √taq 'spread'
(34)	c'ł (tr.) 'cover, shelter'	PS *c'il ~ *c'al 'shade, shadow, shelter etc.'
(35)	c's 'loud'	PS *c'əs 'to rattle, hit'
(37)	c'χ ^w 'white'	Se <ts'exw> /c'əχ ^w / 'get clean/washed'
(38)	kł (tr./itr.) 'fall, drop'	PS *kəl 'to be detached, come off/apart'
(48)	k ^w 'ł (tr.) 'pour out, fill with water'	PCS *k'wəl 'to spill'
(53)	łk' (tr.) 'pull off'	PS *łik' 'to cut, sever'
(55)	łk ^w 'big'	Se <lhakw> /łak ^w / 'swell, get swollen'
(59 _a)	łq ^w (tr.) 'dig up, uproot'	UCh √łəq ^w 'break, pull apart'
(60)	√łt' (tr.) 'pry off, pull with hook'	PS *łət' 'to catch fish with hook and line'
(61)	łχ ^w t 'go through a passage'	PS *łəχ ^w 'to pass through a hole'
(62)	plt 'thick'	PS *pəl 'thick'
(72)	q'łp 'balsam fir'	PIS *c'q'-alp 'fir'
(74)	q's 'tight, intense'	PS *q'əs 'to be of (too) long duration'
(75 _a)	q'χ 'rank, rancid'	PIS *q'ix 'strong, hard, tight, etc.'
(91)	sp' (tr.) 'hit with a stick'	PS *səp' 'to hit, club, whip'
(92)	sq' (tr.) 'cut, tear'	Ts saq' 'split', PS *səq' 'split'
(95)	sq ^w 'fly, jump'	PS *saq ^w 'to fly, jump'
(106)	t'x ^w (tr.) 'brush, sweep'	PCS *t'əx ^w 'id.' and Ts t'ax ^w 'id.'
(119)	sx 'bad'	Li √səx, √sax 'to degenerate'
(122)	sχ (tr.) 'scrape, plane'	PS *saχ 'to scrape'
(127)	χ ^w s (tr.) 'oil, grease'	PCS *χ ^w əs 'to oil, grease'

⁶Distance from South Bentinck Arm (Talyu) to Rivers Inlet is around 48 km.

⁷√p̄q → √q'p may be due to avoidance of */p'q/ (see Table 4) and/or an association with √q'p 'dull'.

⁸Kw √tup also underlies Bella Coola √tup 'foam, bubbles, specks' and tutup 'trout'.

Table 8. Counter-GENH words and roots

List #	Entry	Structure	List #	Entry	Structure	List #	Entry	Structure
9	kp	TT	12	k ^w p	TT	13	k ^w pt	TTT
19	√q ^ʷ p	TT	20	q ^w t	TT	21	q ^w p	TT
22	√tp	TT	23	tk ^ʷ	TT	24	tk ^w	TT
25	tk ^w	TT	26	tq ^ʷ	TT	27	tq ^w	TT
29	t ^ʷ k ^w	TT	30	t ^ʷ q	TT			
39	kłx	TFF	61	łχ ^w t	FFT	64	psx	TFF
69	p ^ʷ χ ^w łt	TFFT	90	slq ^ʷ	FFT	99	√sx ^w λ ^ʷ	FFT
100	sχc	FFT	101	sχp	FFT			
116	łx ^w	FF	117	√łχ	FF	118	√łχ ^w	FF
119	sx	FF	120	sxł	FFFF	121	sx ^w	FF
122	sχ	FF	123	√xs	FF	124	χs	FF
125	√χł	FF	126	√χ ^w ł	FF	127	χ ^w s	FF

Upper Chehalis data from [9], areal data (Salish + Tsimshianic (+ North Wakashan)) from [18]. Kw = Kwakwala, Li = Lillooet, NW = North Wakashan, PS = proto-Salish, PCS = proto-Central Salish, PIS = proto-Interior Salish, Se = Sechelt, Ts = Tsimshianic, UCh = Upper Chehalis.

Conclusions

The main purpose of this paper has been to prove that GENH is not “good enough” for Bella Coola, and that this language is fundamentally non-syllabic. I concur with [20]:

There are no syllables in Bella Coola, and no phonemically significant phenomena of stress or pitch associated with syllables or words. Within a sequence of phonemes one can, of course, hear acoustic pulsations and even differences in the relative degrees of pulsation. Such phonetic syllables result partly from the acoustic nature of the phonemes themselves. Because of their fortis articulation, ejective stops and affricatives are pronounced with stronger pulsations than their non-ejective types. Vowels and syllabic continuants, because of their duration and voicing, stand out acoustically above all

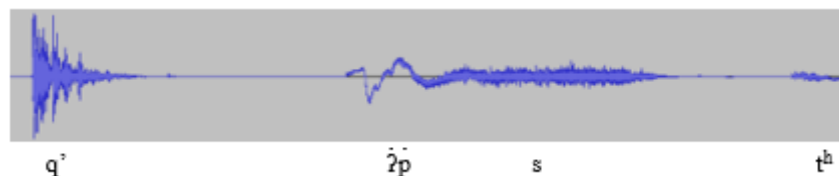


Figure 3. Spectrogram of q^ʷpst [q^ʷpsth] ‘taste (tr.)’ (FirstVoices, Audiotonic)

⁹See Cook (1994) for a lack of consensus on the term “mora”.
¹⁰Recall that /m : m̥/ = /n : n̥/ = /l : l̥/ = /y : i/ = /w : u/ = /h : a/ (or, with schwa, /m : əm/ = /n : ən/ = /l : əl/ = /y : əy/ = /w : əw/ = /h : əh/).

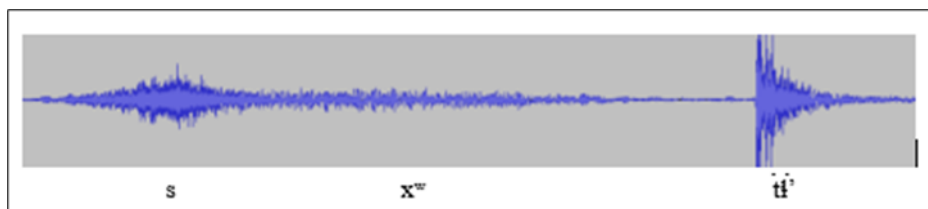


Figure 4. Spectrogram of $\sqrt{sx^w\lambda}$ [sxʷtʰ] ‘inadequate’ (FirstVoices, Audiotonic)

other phonemes in a sequence.

[20]

Still today, this statement is more convincing – as concerns phonetic detail and succinctness – than the theoretical hype of GENH and other hypotheses [1].

Below, I cite words and roots that are not GENH-compatible (T = stop, F = fricative). I list only those $TT\dots$ and $TF/FT\dots$ clusters that appear in boldface in sections 3.1-2.

For a phonotactically divergent language such as Bella Coola, terms like “mora”, “nucleus” and “syllable” are not meaningful. Predictable presence/vacillation/absence of schwa (vocalic peak) in sonorants is a phonetic issue (allophony) rather than a phonemic one (phonotactics). As well, it is difficult to determine “nuclearity” of fricatives in $FF(F(F))$ clusters (see sections 3.2-3).

On the other hand, one may argue that, in order for GENH to gain credibility, Mellesmoen could consider including stops as being potentially nuclear. Phonetic features seem to support this idea: while fricatives are only quasi-sonorant (with duration, but without voicing), fortis stops like /qʰ/, /kʰ/, /λʰ/ have more acoustic strength than fricatives in terms of amplitude and slight affrication and/or delayed glottal release in non-prevocalic settings. This is illustrated in Figures 3-4 below.

However, by including amplitude, allophonic affrication, and delayed glottal release of stops as additional measures of syllabicity, we would complicate rules on sonority-related hierarchies even further (cf. the bulleted issues in 3.2-3).

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