(84) áajiidlaa tláan hagwán xaatgáay aa hl kil wáa'asaan wáadluu tl'
after this never same people to I word do will and then they

galaadáa
good-do
I will tell the (raven) people nevermore to do this same thing after this and then they will be good (i.e., be good-doers).

(85) salíi aa uu l xitláast
trace of he flew from
Afterwards he flew away.

(86) xíts gyáan salíi uu yáalaay ingúust láa kyuu gidáan qahlgwii chíinaay
fly and trace ravens across him for wait to here fish

gwii xit xujúus gyaan uu tl' hldanúu
towards fly all and they feast
And after flying away the ravens waiting for him across the creek all flew over here to the fish and they feasted.

(87) tl' wáadluaan an skisúudaas esgáayst sta tl' xit xujuúáawaan
they all self full make and they from they fly all
They all made themselves full and then they all flew away.

(88) wáadlaa uu tláan yáahl isgyaan xaatgáay gwaa an gaayhltga'ángaan
after that no more ravens and people true self fight not
After that there were never any more ravens and the people didn't fight among themselves anymore.

(89) yakiiaagan dláng gyaahlándaa hl súudaas
true your story I tell
The story I told you is true.

(90) gáadaa eihl uu iijáan yakiiáagan aa gyaahlángwaas
Carter Bay at was true the story
It truly happened at Carter Bay, this story.

(91) tláan gyaahlingáang díingaa
no more story mine
My story is over.

(92) háw'aa
Thank you.

A LOOK AT NOOKSACK PHONOLOGY

by Brent Galloway

0. Introduction. The Nooksack language, /ɬóčæloseəm/ ~ /ɬóčələseəm/, is a Central Coast Salish language, spoken aboriginally throughout most of western Whatcom Country, Washington and as far as six miles north into British Columbia (near Aldergrove and Peardonville and in bilingual villages southwest of [former] Sumas Lake and at Cultus Lake). At present there are only two partial speakers of Nooksack living; the last fluent speaker died in 1977. Through the kindness of Pamela Amoss, Barbara Efrat, Laurence Thompson, Donna Gerdts, and the families of the last two fluent speakers, tapes and field notes made by Amoss, Efrat and Thompson with the last fluent speakers and with one partial speaker of Nooksack have been made available to me. I have also had the opportunity to do linguistic work (mostly on Halkomelem but some on Nooksack) since 1974 with elders of the Nooksack tribe, including the last fluent speaker and the last two partial speakers. I am also very grateful for a research grant (#410-82-0913) from the Social Sciences and Humanities Research Council of Canada which has enabled me to begin transcribing and analyzing the materials of Amoss, Efrat and Thompson and field notes and files of Paul Fetzer (1950-1951). The data offered here is in my transcription from the tapes unless noted; other transcriptions, from field notes, are shown as PF (Paul Fetzer), PA (Pamela Amoss),

LT (Laurence Thompson), BE (Barbara Efrat). Some transcriptions are from Amoss 1961, "Nuksack Phonemics" by Pamela Amoss, her unplublished M.A. thesis at the University of Washington; it is the only linguistic analysis of Nooksack so far and contains many observations which I have been able to confirm or amplify.

As discussed in Thompson 1976:392-393,

> The custom of importing wives from other communities contributed to the early obsolescence of the distinctive language [Nooksack] originally spoken there [the Nooksack speech area]; by the time of White contact this process seems to have been at an advanced stage, so that now only a few persons recall the time when a number of old men in the villages spoke among themselves 'the old language,' while for general purposes other languages were in use--primarily Chilliwack Halkomelem and Skagit. It is now difficult to determine very surely what the original Nooksack language was like, because the materials that have been collected all bear marks of borrowing from the neighboring languages, especially from Halkomelem.

In fact my contact with the Nooksack tribe began in 1974 when I was approached to guide and conduct a group of elders in a Halkomelem Workshop for language maintainance and research. The tribe and group had to choose between Nooksack, Halkomelem and the Skagit dialect of Lushootseed. Since only one elder was fluent in Nooksack, only a few elders in Skagit, and everyone else who knew an Indian language spoke the Chilliwack or Matsqui dialect of Halkomelem, the group decided to concentrate on Halkomelem, as the most prevalent language of communication after English. I worked with the group regularly at weekly meetings till 1981. In 1980-1981 we concentrated on documenting and

visiting all the places with Nooksack names, a study Allan Richardson and I are completing this year and next.

All the speakers and partial speakers who provided the data for the present analysis were trilingual to some degree in Nooksack, English and Upriver Halkomelem (especially the Chilliwack dialect). Two also spoke the Skagit dialect of Lushootseed. Fortunately a dictionary and grammatical materials are available on both Skagit and Upriver Halkomelem (Hess 1976, Hess and Hilbert 1980 and 1981, and others on Lushootseed, Galloway 1977 and 1980, and others on Upriver Halkomelem). These materials, plus Galloway 1982 and my files on Upriver Halkomelem (1970-1981) will provide comparative material to help sort out what is genuinely Nooksack and what is influence or borrowings from Halkomelem, Lushootseed or English.

To help separate specific language influences on each Nooksack speaker here is an outline of the linguistic background of each. George Swanaset (GS) was born in 1871 at Sumas Bar, B.C. His mother, Mary, was from Sumas (a community bilingual in Nooksack and Upriver Halkomelem), and his father, John Swanaset, was Kwantlen (Ft. Langley, downriver Halkomelem). George's father's father was Kwantlen and his father's mother was Tsawwassen (downriver Halkomelem). George's mother brought him to the Nooksack Valley when he was four; at that time she separated and married second to John /skʷá·kʷa/, also known as Long Johnny, headman at the village of /x̣əlx̣ǽlʔæltxʷ/ or of /sčǽwʔšən/ (both one mile

upriver from Everson, Wash.) and one of three leaders of the /kʷáneč/ band at Everson. When George was in his early twenties his step-father, John (a Nooksack and speaker of Nooksack) died. George's mother then married John's brother, Jim /ləqʷəlqínəm/, called Jim Kelly, the next headman of /sčáw?šən/ and also fluent in Nooksack.

George grew up with Chilliwack Halkomelem as his first language, but learned Nooksack from his step-fathers. He married Sarah George, daughter of Tenas George and granddaughter of Lynden Jim /səɬáməətæn/ (or /səɬáməton/); Lynden Jim was a fluent speaker of Nooksack and prominent leader of the /máməqʷəm/ band. George and Sarah had a son, Dan. George's second wife, Susan, died young. George's third wife was Louisa, part Nuxʷ?áha (Lushootseed-speaking) and part Samish (Straits Salish); they had one daughter, Georgina (Violet) but separated when she was one year old. Louisa remarried to Charlie Anderson, a Skagit. George Swanaset's children did not learn Nooksack, but Violet became fluent in Skagit and now teaches it and does valuable research on Lushootseed.

George Swanaset was head chief of the Nooksack tribe from 1920 to 1926. He worked with linguist Thelma Adamson in the 1930's, with Paul Fetzer in 1950-1951, with Wayne Suttles in 1950 and 1958, and finally with Pamela Amoss 1954-1956. He died about 1960.

Sindick Jimmy (SJ)(born Sept. 20, 1893, died July 12, 1977) was born in Everson, a son of Lizzie (Sulkanem)

(Lizzie Roberts) and Jack Jimmy (born ca. 1867). Jack Jimmy was half Skagit (Skagit name [xəbéyləb]) and half Nooksack; he spoke Skagit. After Jack married they stayed in the Chilliwack area and he learned to speak Chilliwack Halkomelem (he was called [sxəméyləm] in Halkomelem). His father may have been /c'uluqʷíws/, a Nooksack, grandfather also of Louisa George.

Jack Jimmy's wife, Lizzie, was a daughter of Robert /s?əlqínəm/ (who spoke Nooksack) and his wife (who was part Sumas and spoke Chilliwack Halkomelem or a neighboring dialect of Halkomelem). Sindick learned Skagit from his father as his first language, Chilliwack Halkomelem from his mother, and Nooksack from his mother's father, perhaps reinforced by his mother's sister, Mrs. Lottie (Sulkanem) Tom, who spoke a little Nooksack. Sindick's wife of many years, Susan (married 1921) is a fluent speaker of Chilliwack Halkomelem, as is their daughter, Maria. Neither Susan nor Maria learned Nooksack.

Mrs. Louisa (Johnson) George was born Dec. 16, 1893 at Everson, a daughter of Annie and Joseph Johnson. Her mother's father was Gus or Oscar [téɬéxéčtəl]/téɬéxéctel/ (a Chilliwack name) from /qʷəqʷə?ápəɬp/ village, now Chilliwack Indian Reserve #6. Oscar married /cisxʷísaɬ/, also known as /cisyúyud/ (a Skagit name), who apparently came from Nooksack but spoke Skagit. It was Louisa's father's father, called Johnson /culuqʷíws/, who spoke Nooksack; he married a Skagit woman from the Suiattle group.

Although Louisa's first language is Skagit, in which she is quite fluent, she heard Nooksack a good deal as a child, understands it well, and can speak some words and phrases as well as translate it fluently. She also heard Chilliwack Halkomelem from her mother's father, Oscar /tɛ́lə́x̣ə́ctəl/, and her aunt /c'ətásíyɛ/, both from Chilliwack. So she also understands Chilliwack Halkomelem well and can speak some words and phrases. Her work has been of substantial help in the preservation of all three Indian languages. She married Richard George about 1909; a daughter, Helen, has been studying all three languages for several years.

Mrs. Esther (Johnny) Fidele was born 1903 at /sčǽwʔšən/, near Everson; she is a daughter of Jack Johnny (Suckanon) who was a son of Long Johnny /səq'qínəm/. She heard Nooksack from her grandfather, Long Johnny, till he died (after she was already grown). Long Johnny's brother, Jim Kelly /ləq^{w}əlqínəm/ (born ca. 1834) was also fluent in Nooksack, and Esther remembers him speaking Nooksack as well. Esther can speak some words and phrases in Nooksack. As with the other speakers initials are used for Louisa George (LG) and Esther Fidele (EF) when quoting their pronunciation in the paper.

1. Phonemic Inventory.

Consonants		Bilabial	Interdental	Apico-Alveolar	Apico-Alveolar-palatal	Lamino-Palatal	Lateral	Dorso-Velar Plain	Dorso-Velar Labialized	Dorso-Postvelar Plain	Dorso-Postvelar Labialized	Glottal
Stops	vl.	p		t				(k)	k^{w}	q	q^{w}	ʔ
glottalized		p'		t'					k'^{w}	q'	q'^{w}	
Affricates	vl.			c	č							
glottalized			(θ')	c'	č'		ƛ'					
Spirants	vl.		(θ)	s	š	(x^{y})	ɬ		x^{w}	x̣	$\dot{x}^{w}$	h
Resonants	vd.	m		n		y	l		w			

Vowels	Front unrounded	Mid unrounded	Back unrounded	Back rounded
High	i			u
Mid		ə		
Low	æ		(a)	

Stress ´ Word boundary #

The status of [k] as a phoneme is not certain yet. All examples but one seem to be in loan-words (see 2.1 below), but more examples of the Nooksack word are needed to confirm that it is [k] and that it is Nooksack and not a loan. /θ/ and /θ'/ replace /c/ and /c'/ everywhere for speakers such as GS and perhaps EF; for other speakers such as SJ and LG [θ] and [θ'] are rare mistakes (Halkomelem-influenced), corrected to /c/ and /c'/ wherever possible. /x^{y}/ is a

replacement for /š/ in certain words in the speech of GS but not in the speech of SJ or LG; this replacement is Halkomelem-influenced also. SJ and LG do not require the /x^y/ phoneme in their Nooksack inventories.

The vowel symbols i, æ, and ə are chosen as the phonemic symbols because they are the allophones which occur under primary stress. Probably it is [ʌ] which occurs under primary stress instead of [ə], but as a concession to my typewriter I have written [ó] instead of [ʌ́] throughout. For /u/, both [ú] and [ó] occur under primary stress (in free variation), so /o/ would work just as well; it may be preferable for GS who has [ó] far more frequently than [ú]. But since the other speakers have [ú] just as frequently as [ó], and since /u/ is more coordinate with /i/, I use /u/.

2. Phonetics and Phonemics.

2.1. Articulation. Among manners of articulation Nooksack has plain stops (usually aspirated, as will be seen below), glottalized stops (with fairly strong glottalization), voiceless affricates (slit vs. groove, or perhaps better here, alveolar vs. alveolar-palatal, usually aspirated, as will be seen below), glottalized affricates (with fairly strong glottalization), voiceless spirants, and voiced resonants (two nasals, a lateral and two semivowels). It is not necessary to postulate glottalized resonants as phonemes.

As to places of articulation, Nooksack begins with a bilabial series, including /p, p', m/. /w/ is bilabial too

but functions structurally with the labialized consonants (as in most Salishan languages); /w/ and labialized consonants for example often form an environmental set (excluding /p/, /p'/ and /m/) which conditions allophonic alternations.

For Nooksack, an interdental series /θ, θ'/ is necessary only for some speakers heavily influenced by Halkomelem (such as GS). GS replaces /c, c'/ with /θ, θ'/ everywhere. He has, rarely, added some [c] and [c'] by Halkomelem influence, but only where other speakers have Nooksack /č/ and /č'/; these rare examples often have [c] in free variation with [č] and [c'] in free variation with [č'], exactly as in Halkomelem. Contrary to Amoss 1961, GS does not replace /s/ with /θ/, at least not in any of the tapes available to me. For other speakers, like SJ and LG, [θ] and [θ'] are rare, mistakes corrected to /c/ and /c'/, respectively, whenever possible. More will be said about this below, with examples. /θ/ and /θ'/ are pronounced as in Halkomelem, interdental, with /θ'/ being an interdental affricate, [$t^{\theta'}$].

The Nooksack apico-alveolar series includes /t, t', c, c', s, n/. /c, c'/ are the typical affricates [ǽ] and [ǽ'], respectively.

The alveolar-palatal series includes /č, č', š/, the lamino-palatal series /y/ (and /x^y/ for GS). /x^y/ is necessary only for speakers heavily influenced by Halkomelem (such as GS) and with them seems to be an occasional morphologically-determined replacement where other speakers have /š/. GS has both /x^y/ and /š/, but so far they haven't been

found in free variation in his speech. More will be said about /x^{y}/ and /š/ below. Other speakers, such as SJ and LG, have only /š/ and never /x^{y}/. /x^{y}/ is pronounced as a lamino-palatal voiceless spirant with lots of friction, as in Mainland Halkomelem. (Historically only Mainland Halkomelem retains /x^{y}/ from Proto-Central Coast Salish */x^{y}/, while the other Central Coast Salish languages, including Nooksack, have developed /š/. See Galloway 1982.)

The lateral series includes /ƛ', ɬ, l/. Amoss 1961 reported [ɬ] in free variation everywhere with [ƛ] as allophones of /ƛ/; of these she found [ɬ] was the most common. I have not found any instances of [ƛ] in my transcriptions nor in those of BE or LT. So I have used /ɬ/ to symbolize the phoneme involved. The only unusual feature of /ɬ/ is that in the speech of SJ and GS on tape [ɬ] sporadically sounds a bit like [s] or [š]. Since all examples of this are from texts (plus a few from longer sentences) yet the citation forms and usually the texts have clear [ɬ] in the same words, I believe these are allophones in lenis pronunciation. More about this below.

The plain velar series probably did not exist in immediate pre-contact times. All examples of /k/ to date are in borrowings from Chinook Jargon or English, except for one: SJ has [k^{h}ə?ék^{h}ət^{h}] later and [k^{h}ɛ?ék^{h}t^{h}#q^{h}əy#x̣^{w}il?ic^{h}íč^{h}(#) k^{hw}Um?]
later/wait and beat up-you-I future Watch out, I'll beat you up. This same root may appear in Halkomelem spoken by Nooksack elders, [k^{h}ək^{h}ə?ét^{h}]

a little later and [k^{h}ə?éc#?əl] Wait a bit. (/?əl/ just) and in Halkomelem spoken in B.C. (Chehalis dialect on Harrison River) [k^{h}éčx^{w}à] Wait a while! (probably k^{h}éč-čx^{w}-à where /-cx^{w}/ is second person singular imperative and /-à/ is the Chehalis version of Chilliwack /?əl ~ ?àl/ just. If this root with [k] is inherited and not diffused, then Nooksack had a marginal /k/ series. It is not clear yet whether Nooksack shares with Halkomelem the phonological process of /q/ → /k/ and /q'/ → /k'/ as the only other source of unborrowed /k/ and /k'/. Halkomelem has /k'/ in a few words borrowed from the Thompson language. Lushootseed also has /k'/ in a few words, some resulting from a diminutive process of delabialization, some perhaps rare exceptions to a sound shift (see Galloway 1982). So far no words are attested with /k'/ in Nooksack.

I have transcribed velar [x] in two roots only, both with alternative pronunciations of [x̣], and both where Halkomelem has /x^{y}/ in cognates and Nooksack should have /š/. SJ has [c^{h}ɳ#sčuwéx] my wife, [c^{h}é?æ sčəwéx] (ə may be o) your wife, [č^{h}uwéx̣] wife and [č^{h}uwéx̣ənit^{h}ɛs] he proposed to her; GS has [č^{h}əwéxənit^{h}ès] he gets her for a wife; LG has [č^{h}əwé·š] wife but [ƛ'ə?éyxən] invite beside [ƛ'æ?éx̣ən] invitation. Compare NLd (Northern Lushootseed) /čəg^{w}ás/, SLd (Southern Lushootseed) /čég^{w}əš/, UHk (Upriver Halkomelem) [č^{h}é·x^{w}]/cé·x^{w}/, all wife < Proto-Central Coast Salish *č(ə)wéx^{y} wife (UHk through *čéx^{y}(ə)w) (see Galloway 1982). Also compare UHk [ƛ'ə?éx^{y}Il]/ƛ'ə?éx^{y}əl/ to invite.

I analyze the Nooksack [x̣] and [x] in these cases as variants influenced by UHk /x^{w}/ and /x^{y}/. If Nooksack developed a /š/ in these words, Halkomelem-speaking bilinguals may have replaced it by /x^{y}/, then backed it to [x] under the influence of Halkomelem /x^{w}/ (and Lushootseed /g^{w}/), or backed it to /x̣/, realizing that Nooksack is not supposed to have either /x^{y}/ or /x/. Since [x] is not a Nooksack (nor Halkomelem) phoneme it went to [x̣] /x̣/ which is phonemic in both languages. Though this complex history is only a theory, the word for wife has a complex history, and it seems clear that the two words should be written with /x̣/ where [x] or [x̣] occurs rather than to set up an additional phoneme /x/. All the Central Coast Salish languages lack /x/ as a phoneme though they all have /x^{w}/, /x̣/ and /x̣^{w}/.

The Nooksack labialized velar series includes /k^{w}, k'^{w}, x^{w}/ and structurally /w/ (see above). The plain dorso-postvelar or uvular series includes /q, q', x̣ /, and the labialized uvular or dorso-postvelar series includes /q^{w}, q'^{w}, x̣^{w}/. These last two series are not really articulated on the uvula but on the back of the velum or soft palate, close to the uvula. The glottal series includes /ʔ, h/.

Front vowels include /i/ ([i, I, e]) and /æ/ ([ɛ, æ]). Mid vowels include only /ə/ ([ɨ, ə, ʌ]). Back vowels, rounded, include only /u/ ([u, U, o, ɔ]). [a] is low back unrounded but marginal as a phoneme; it appears mainly in loans or words influenced by Halkomelem or Lushootseed.

In the sections that follow, an effort is made to com-

pare and contrast the phonetic details and allophonic rules of each speaker with those of the other speakers. An effort is also made to quote cognate forms and sources of borrowings from Upriver Halkomelem (UHk) and Lushootseed (Ld). Both efforts are necessary to help establish an accurate picture of Nooksack phonology and an accurate picture of the influences of neighboring languages. They will also show Nooksack as an independent language in its own right. Further factors that will be considered are the phonetic and morphophonemic effects of shifts in tempo.

2.2. Aspiration and Release of Obstruents. Unglottalized non-glottal obstruents ($C_{ob}^{-?}$) have aspirated and unaspirated allophones in free variation when preceded by /s/ and followed by a vowel; the unaspirated allophones are preferred in the speech of SJ; in that of GS and LG aspirated and unaspirated allophones here occur about equally. At slow tempos unglottalized non-glottal obstruents have aspirated allophones before the same obstruent, word boundary intervening. At other tempos (normal or rapid), /t/ is unreleased before unglottalized alveolar consonants (if present, intervening word boundary is lost); thus [t^{+}t^{h}, t^{+}c, t^{+}š, t^{+}s, t^{+}č] are all attested. Also at normal or rapid tempos all unglottalized consonants including /ʔ/ are unreleased before an identical consonant with word boundary intervening. When # is lost (as it usually is here) the resulting geminates have from one-half to one whole mora of length, depending on tempo. Thus [s^{+}s, ɬ$^{+}$ɬ, x^{w+}x^{w}, n^{+}n,

$y^{+}y$] are all attested so far, at normal or rapid tempos. Glottal stop is aspirated only word-finally (but not before #ʔ, where $ʔ^{+}ʔ$ is found, at normal or rapid tempos). Elsewhere (i.e., neither prevocalic after /s/ nor before # and an identical obstruent), unglottalized obstruents except ʔ are always aspirated. As Amoss 1961 notes, aspiration is fairly strong wherever it occurs.

These rules can be shown formulaically as follows (let $C_{ob}^{-ʔ}$ = unglottalized obstruents minus ʔ, and $C^{-glot.}$ = unglottalized consonants including ʔ, and C_{ob}^{a} = a given unglottalized obstruent; __V = before vowel, $\overset{f}{=}$ = varies freely with, C_{alv} = alveolar consonant, (#) = optional #).

2.2.1. $/C_{ob}^{-ʔ}/ \rightarrow C_{ob} \overset{f}{=} C_{ob}^{h}$: s__V

For example, SJ has [spéʔæc^{h}] bear, [ʔɛspúnəm] to be seen, [ʔist^{h}íʔt^{h}iʔix^{w}] people beside [t^{h}i#stíʔt^{h}iʔix^{w}uɬ] the people of the past, [sti^{ə}q^{h}íw] horse, [stúlʔəwʔ^{h} ~ stúlʔɛwʔ^{h}] river, [mUk'^{w}stém] everything, [stém] what?, [ʔæsʔístɛ] just like, [sčIlʔú·m ~ č^{h}Ilʔúːmˑm] liver, [sčélIš] (someone's) hand, [sk^{w}éyil] day, [sqéwɛc^{h} ~ sq^{h}éwɛc^{h}] potato, [sq^{w}í^{ə}q^{hw}əməyʔ^{h} ~ sq^{hw}í^{ə}q^{hw}əməyʔ^{h}] little dog, puppy (BE writes ʔ instead of ^{ə} here, although I cannot hear the ʔ on the tape; ʔ might be expected here because of diminutive reduplication patterns), [sq^{w}él^{y}iwən] thought, feeling.

GS has [p^{h}əsp^{h}ésk^{hw}t^{h}əm] he was insulted or sworn at repeatedly (about his body), [spúʔ^{h}] wind, [ʔæsʔíst^{h}æ ~ ʔæsístæ] like that, [ʔæst^{h}ís] near, [stíˑyUx^{w}] person,

[stíʔt^{h}iʔyUx^{w}] people, [stéːx^{w}əɬ] children, [sčéčˇ^{h}Il] how?, [ʔɛsk^{hw}élil] hidden, [sk^{w}éyIˆl] day, [sq^{h}ənʔíʔc^{h}] clothes, [sq^{h}əlˑéwʔ^{h}] (hyper-slow) beaver, [sʔíˑɬɛn] (hyper-slow) food.

And LG has [sp^{h}íwʔ^{h}] ice, [spux^{w}ɬélim ~ spUx^{w}ɬélim] to breathe, [sp^{h}úk^{hw}əm] a pile of something, [spɛ́nwæ ~ spɛ́nwæˋ] year, [stúlʔæwʔ^{h} ~ st^{h}úlʔæwʔ^{h}](both variants quite clear) river, [stéʔæx^{w}əɬ] children, [stém] what?, [t'ɛnóst^{h}ɛˋl] two people sitting close together, [stéčˇ^{h}iˇws ~ st^{h}éčˇ^{h}Iˆws] body (of a person), [ʔɛsq^{hw}ónust^{h}əwɛlʔ^{h}] They're hugging each other, [sčuwʔétˇ^{h}čˇ^{h}ɛx^{w}# k^{hw}əyʔ^{h}#scíyæt^{h}#t^{h}ə#k^{hw}óp^{h}i] You know how to make coffee. (shows both č and c after s), [sk^{w}éʔɛˇm] basket with lid, [sk^{w}ṯt^{h}éˑl ~ sk^{hw}ṯt^{h}éˑl] a fight, [ʔɛsk^{hw}én] he's got something (having a fit or a disease), [sk^{w}éyil] day, [sk^{hw}əmˆˈós] round forehead (not flattened), [sq^{h}ənʔíč^{h}] clothes, [sq^{h}əmó] breast, [sq^{h}əlnóp^{h}] dust, dirt in house, [sq^{w}et^{h}šéˑm] fog, [sq^{hw}əméyʔ^{h}] dog, [sʔélyɛ] positive power for dancing and singing.

2.2.2. $/C_{ob}^{a-ʔ}/ \rightarrow C_{ob}^{h}$: __#$C_{ob}^{a}$ (slow tempos)

For example, SJ has [ʔiɬ#ʔəy#t^{h}óp^{h}unɛmʔ^{h}#q^{h}əlét^{h}#t^{h}ɛ# méns] His father hit him again. (slow speed also shown in [t^{h}ɛ] replacing [t^{h}ə], see 2.14); [t^{h}ə#šéwəq^{h}#q^{h}əys#t^{h}ə# spénəxˇ^{w}] the carrots and the camas; [ʔɛˈnɛć#ʔiɬ#p^{h}ɛˈnɛt^{h}#t^{h}ɛ #ʔóc^{h}] I planted the oats. GS has [t'onómut^{h}#t^{h}éyInu] they understood. LG has [k'^{w}ɬɬɬt^{h}#t^{h}ə#hóč^{h}ɬm] spill the water and similar examples of t^{h}#t^{h}.

Examples with consonants other than /t/ or /ʔ/ are harder to find since /t/ and /ʔ/ are more frequent as initials and finals than are the other obstruents; the examples also must have such an obstruent word-finally followed by the same obstruent word-initially. The present sample includes more sentences from SJ and GS than from LG and includes eight texts transcribed so far from SJ (five) and GS (three) and none from LG.

2.2.3. /t(#)/ → t^+: $\_\_C^{-glot.}_{alv.}$ (normal or rapid tempos)

For example, SJ has [ƛ'ə́q^{h}t$^+$ t^{h}ə#mə́q^{h}in] The hair is long., [ʔəy#p^{h}ə́nɛt$^+$ t^{h}ə#ʔóc^h] planting the oats, [ƛ'ú# t^{h}uwə́t$^+$ cíyæ#sɬə́nəy^{ʔh}] Who is that woman?, [ɬíč'it$^+$č^{h}æx^w] (you sg.) cut it!, [lelót$^+$ šə́ɬ] railroad tracks. LG also has [hə́ʔɬ#t^{h}ə#ʔə́əy^{ʔh}#səlʔə́c^{h}ot$^+$s] His character is good. (from {səlʔə́-cut-s}). GS has [k^{hw}s#Θəwə́t$^+$s#t^{h}ə#stə́:x^{w}əɬ] that he take care of the children. [t$^+$n] may occur as well in Nooksack, but I have no examples yet.

2.2.4. /$C_a^{-glot.}$(#)/ → C_a^+: $\_\_C_a^{-glot.}$ (normal or rapid tempos)

For example, SJ has [x̣^{w}ə́mʔ$^+$ ʔú˘x̣^{w}č^{h}ɛɬ] Let's go., [mús$^+$ sk^{w}ə́yil] four days, [ʔiɬ$^+$ ɬíč'#t^{h}ən#č^{h}ə́lIš] I cut my hand., My hand got cut., [ʔìɬ#ʔistíʔyʔUx^{w+} x^{w}t^{h}ɛʔə́^{h}#c^{h}ɛ́məƛ'u] He is older than she is. GS has [ʔóx̣^{w}x̣^{h}k^{hw}Umʔ$^+$ ʔəsístæ] I will go like that, [mɛlʔ$^+$ ʔəsʔí·č'il] just lazy, [θút$^+$ t^{h}ə# q^{h}ələ́ʔwiyæ^{ʔh}] Beaver said, [ʔiɬ#k^{hw}s$^+$ səwə́t^{h}əms] that they be taken care of (or respected) (GS usually has initial θ in the last word, but the [s], though a speech error, still shows

the rule in operation). LG has [ʔíɬ$^+$ ɬə́məx^{w}nəx^{w}ɛs] He made it rain, [ʔìɬ#t^{h}x^{w+}x^{w}nə́ʔəmʔis#ʔìɬ#nəwʔnə́wʔnit^{h}əm] His power went into him (someone else)., [ɬiyʔə́ʔč^{h}ən$^+$ nícč^{h}imt^{h}x^w] Right here I spoke to him., [ʔəy$^+$ yí^q^h] (but hyper-slow: [ʔəyʔ#yI^q^h]) It's snowing.

2.2.5. /ʔ/ → ^{ʔh}: $\_\_\#C^{-ʔ}$

For example, SJ has [c'ə́li^{ʔh}] heart, [šcíʔyu^{ʔh}] strawberry, [sɬə́nəy^{ʔh}] woman, [x^{w}t^{h}ɛʔə́^{ʔh}] than; for. GS has [spúʔ^h] (though this could be [spúʔh]) ~ [spúʔs] wind, [sq'ə́·ylo^{ʔh}] food that's put away, [sx̣^{w}iyə́m^{ʔh}] myth, legend. LG has [x̣ə́x̣ənæ^{ʔh}] little feet, [ʔəy#hə́ʔwən^{ʔh}] hunting, [nə#sƛ'íʔ^h] I want, [sæɬə́·m^{ʔh}] chief, headman; high-born person.

2.2.6. /$C_{ob}^{-glot.,-ʔ}$/ → C^h_{ob}: elsewhere

For example, SJ has [p^{h}íšp^{h}iš] cat, [č^{h}íləp^{h}əm] have a tickling sensation, [hó^·nč^{h}up^h] make a fire, [t^{h}uwə́t^h] who?, [ʔúx̣^{w}t^{h}x^{w}ɬæ#t^{h}ɛ́ʔɛ#st'ílim] Sing your song!, [k^{h}əʔə́k^{h}ət^h] later, [c^{h}ɛ́məƛ'o] she, [k^{hw}úx^{w}əc^h] silver (coho) salmon, [yúməč^h] spring salmon, [q^{h}əlʔú·m] eye, [mə́q^{h}sn̥] nose, [c'ók^{hw}s] seven, [q^{hw}ə́yilʔ^h] turn yellow, [q^{hw}ɬóyʔšIn] shoe, [c'ic'q^{hw}áyʔ^h] trout. GS and LG show the same patterns, as can be seen in examples quoted from them above.

2.2.7. Contrast with Halkomelem. The rules and forms above seem clearly Nooksack since all three speakers have them and since they contrast in several regards with those of Upriver Halkomelem. UHk unglottalized obstruents have unaspirated

allophones in two positions, prevocalically after /s/, and before syllabic consonants; aspirated allophones cannot occur in either place, unlike in Nooksack. Elsewhere UHk has aspirated allophones; this includes [t^h] before (#)$C_{alv.}$ and other C^h_{ob} before identical C_{ob} (with or without intervening #), unlike in Nooksack. I believe UHk spirants and resonants however can follow rule 2.2.4 at rapid tempos, as in Nooksack. UHk also has lost /ʔ/ before consonants and finally, replacing it with length in these environments. Only in a few slang terms and interjections is UHk /ʔ/ found word-finally, unlike in Nooksack; it is aspirated finally when it occurs there, as in Nooksack.

The phonemic sound correspondences between Hk and Nooksack and Ld have been discussed in detail in Galloway 1982 (which covers all the Central Salish correspondences in fact and proposes reconstructions). But to show some typical phonetic differences in form I will quote a few UHk cognates to some of the Nooksack words cited so far. Many more could be cited; out of 45 examples of 2.2.1, UHk cognates could be supplied for all but seven. UHk cognates include: [$sq^wf^əq^{hw}əmɛy$] little dog, puppy, [$sqǽwθ$] potato, [$mIstíyUx^w$] person, [$spǽ·θ$] bear, [$mímələ$] small child, [$swǽyIl$] day; sky, [$stá·lo(w)$] river, [$scÍl·əm$] liver, [$x^hǽlIx^y$] hand, [$sk^wǽ·l$] hidden, [$s^ʔɛ́ɬt^həl$] food, [$stǽ·x^wəɬ$] children, [$sk^wǽ·m$] lidded basket, [$sq^wɔ́t^hx^yIm$] fog, [$spIlwǽ·ɬ$] last year (cf. Nooksack [LG] [$spɬnwǽʔhɔ́ɬ$] last year), [$sqəl·ɔ́p^h$] garbage, refuse.

Since the rules for Nooksack aspiration have been given along with many examples, from here on aspiration will not be written in the phonetic quotations unless specifically at issue. Similarly, word boundary will be replaced from here on by a space between words in phonetic citations, unless specifically at issue.

2.3. Partial Unrounding of Labialized Consonants. In Amoss 1961 labialized velars are described as having unlabialized allophones before the rounded vowel, and labialized postvelars are described as not occurring before the rounded vowel. In my transcriptions of the tapes and in those of LT and BE both labialized velars and labialized postvelars are found phonetically before the rounded vowels. Close listening to these cases suggests that both views have some validity. Labialized consonants are partially delabialized before rounded vowels but not totally delabialized. I found the same process in Chilliwack Halkomelem independently (Galloway 1977:9-10) before reading Amoss 1961.

It seems labialized consonants in Nooksack become from half- to three-quarter-rounded before /u/. This can be symbolized phonetically as [$C^{w/2}$] (in this section). Such partial delabialization is attested more in the speech of GS and SJ than in that of LG.

2.3. /C^w/ → $C^{w/2}$: __u

For example, SJ has [$q'^{w/2}ɑ́l ʔUx^w$] dog salmon, [$k^{w/2}ɑ́Wəc$] silver salmon (coho), [$čIlq^{w/2}ɔ́məʔ$] blackcap berry (cf.

UHk [cIlqá·mə] blackcap berry, where historically UHk as lost or Nooksack has gained labialization), [máq$^{w/2}$o?] snow on the ground (cf. UHk [mǽqæ] snow on the ground, again showing UHk's loss or Nooksack's gain of labialization historically. This citation of SJ apparently shows Skagit influence on the vowel, yielding /a/, the normal Skagit or Lushootseed correspondence for UHk /ɛ/, Nooksack /æ/. Cf. Lushootseed /báq^{w}u?/ snow (noun)), [šx$^{w/2}$Um?ník^{w}] uncle, aunt, [x$^{w/2}$úyum] (slow) ~ [x$^{w/2}$úyəm] (normal) to sell, [s?áx̣$^{w/2}$o?] small clam (cf. UHk [s?áx̣^{w}ə], Ld [s?áx̣^{w}u?] butter clam; the citation by SJ may show Skagit influence). Contrast SJ examples like [yi sq'ó?] together with and [łəq'ółˑ] used to, which show that unlabialized obstruents can occur before /u/.

GS has [q$^{w/2}$o?ó·p] crabapple, [q$^{w/2}$ó̓q^{w}əl·æ] hemlock, [q'$^{w/2}$ó·x^{w}əl?m^{y}ix^{w}] (q'^{w} 3/4-rounded) loose dirt just lying around, [x$^{w/2}$o?wók^{w}] not yet, [k'$^{w/2}$ónλ'əl] Kwantlen (village), [?ox̣^{w} k$^{w/2}$ómæ] go way back (away from water).

LG has [s?ǽx̣^{w}o?] clam, [sk^{w}óyɛˇ? ~ sk^{w}óyæˆ?] squirrel, [šx^{w}əx^{w}ó?os] thunder, thunderbird, [k^{w}ósɛn] (normal tempo) ~ [k^{w}ósæn] (careful or hyper-slow) star, and [yłq'ós] to sharpen (where LG is careful not to labialize [q'], cf. UHk [yéq'əs-t] to sharpen something).

2.4. Palatalization of /t, l, m/. Amoss 1961 noted fronted allophones [t̻] and [q̻] for /t/ and /q/ before /i/. Although my transcription and those of LT and BE do not show traces of [q̻], I did transcribe noticeable palatalization of

[t^{y}], [l^{y}] and [m^{y}] before /iw/ and before /iC^{w}/. This is a distinctive feature of Nooksack not found in Halkomelem nor in Lushootseed.

2.4. /t, l, m/ → t^{y}, t^{yh}, l^{y}, m^{y}: _iC^{w}, iw

For example, LG has [čí·tm^{y}ix^{w}] owl, [sq^{w}ǽl^{y}iwəˑn] thought(s), feeling(s), [sq'^{w}ółəlm^{y}iˇx^{w}] blackberry, [t^{yh}íx^{w}cɛɬ] tongue. GS has [q'^{w}ó·x^{w}əl?m^{y}ix^{w}] loose dirt just lying around, [nəc'ómˇ^{y}Ix^{w} ~ nəč'ómˇ^{y}Ix^{w}] different tribe, [t^{h}m̓^{y}íx^{w} ~ t^{h}əm^{y}íx^{w}] earth, land, territory, [l^{y}í^{ə}q^{w}il] slack off, calm down. SJ has [sq'^{w}ól?Ul?m^{y}iˇx^{w}] blackberries, [sq^{w}ǽl^{y}iwəˑn] thoughts, feelings, [?əy pən?ǽl^{y}ik^{w}] planting.

2.5. Interdentals and Alveolar Affricates. As mentioned in 2.1, /θ/ and /θ'/ are needed (to replace /c/ and /c'/ everywhere) only for some speakers heavily influenced by Halkomelem (GS, EF). For other speakers (SJ, LG), [θ] and [θ'] are rare, mistakes corrected to /c/ and /c'/ respectively, whenever possible.

2.5. /c, c'/ → θ, θ': in the speech of GS and EF

For example, GS has [qəl·ó?θ] dull (of knife), [θəmǽλ'ó] that (female), she, her, [θúˑt ~ θóˑt] say, [k^{w}ənǽn?θ] get me, [θíyæ] this (female), [θə] the (female), [θə?ít] it's true, [xáλ'θot] to get rough-flowing, turbulent, [k^{w}o x^{w}íθoš] long ago, [k^{w}s θəwǽt^{+}s] that he take care of them, [yíθɬmtx^{w}] to tell them; [sθ'ópəθ'] tail, [θ'í^{ə}x̣^{w}nitəm] he is pitied.

And EF has [sθó·neɬ] (proper name of a woman alive when the whites first came; now the name of Esther Fidele) and [pǽʔæθtəl] (village name, literally bear-device) (see Galloway and Richardson 1983).

But SJ has [cócin] mouth, [spǽʔæc] bear, [cémæʌ'o] that (female), she, her, [sqǽwəc] potato, etc.; [c'éli?] heart, [c'íwəq'] red elderberries, [c'íx^{W}ničəx^{W}] you take pity, [sc'ú·m?] bone, etc.; and only rarely [θíyə] this (female), [s?át$^{\theta}$us] (~ [s?ácus]) face, [θə] the (female), [tímiθUt] do it hard, [sθ'úq^{W}əy?] (corrected to [sc'úq^{W}əy?]) fish, [θ'ik^{W}ə?íws] (corrected to [c'ik^{W}ə?íws]) left-hand (side), [sθ'ú·m?] ~ [sc'ú·m?] bone.

Similarly LG has only [pónθutčɛn] I looked at myself. with [θ], out of several hundred words and sentences, and no [θ'] in contrast to [yémq'cUt] rub oneself, [qəlóc] dull [edge], [?əy có?ot] talking, [cə?ít] it's true, [s?écos] face, [sc'óq^{W}əy?] fish, [c'íx^{W}] pity, [c'é·li?] heart, etc.

Halkomelem has cognates for almost all of these examples, and in every case has /θ/ or /θ'/.

2.6. Alternation of [c] ~ [č] and [c'] ~ [č'] in the Speech of GS. This alternation sporadically introduces [c] and [c'] only where other speakers of Nooksack have [č] and [č']. I have not found it as widespread as Amoss did, but it does exist. For example, GS has [sqən?í?c] clothes, [nəc'ómIx^{W}] a certain tribe (but elsewhere in the same text [nəč'ómIx^{W}]), [nænəc'ó] one person (but elsewhere in the

same text [nænəč'ó] one person). Such variation is characteristic of Halkomelem (Galloway 1977:5-7) but is not found so far in the speech of the other Nooksack speakers, SJ and LG. LG for example has only [sqən?íč] clothes, [nən?č'ó? ~ nɛnč'ú?] one person and similarly SJ [nən?č'ú? ~ nɛn?č'ú?] one person.

2.7. /x^{y}/ in the Speech of GS. /x^{y}/ has not been found in the Nooksack of LG or SJ. GS has both /x^{y}/ and /š/ but not in free variation; apparently /x^{y}/ is an occasional morphologically-determined replacement where other speakers have /š/. For example, GS consistently has [q'ə́l?x^{y}tæn] little mat, [canoe mat], [híwəx^{y}ɛs] they bring it forward, [x^{y}æɬəmín] look after, take care of, [q'^{W}əyílIx^{y}čáləp] dance (you folks)!, [qələɬómIš] ugly, bad-looking, [nəčəwáš] my wife (but [čəwáxənitæs] he gets a wife), [ɬx̣élIš] stand up, [?ímIš] walk, [?ɛsx̣əlx̣əl?áčšn̩] (PA has č' in place of č here and may be correct) with his legs crossed. For more examples from GS see Galloway and Richardson 1983.

SJ has [?i?yúmIš] pretty, good-looking, [ɬx̣élIšɬæ^] stand up!, [q^{W}ənɬq^{W}šn̩] ankle, etc., all with [š]. LG has [hí?k^{W}šən] big feet, [q^{W}n̩?i$^{\theta}$q^{W}šn̩] knee, [ɬəx̣é·lIš] to stand, [?ímæš ~ ?ímIš] to walk, [čəwé·š] wife, [šuɬmí$^{\vee}$n] take care of, look after, [q'^{W}ə?yí·lɬš] to dance, etc., all with [š] /š/.

Upriver Halkomelem has cognates for most of these, all (except wife, as discussed above) with /x^{y}/. GS then seems to have /x^{y}/ by Halkomelem influence. Such Halkomelem-

influenced accents as GS has were probably frequent in the Nooksack speech community. Agnes James, in an interview on Nooksack place names, Aug. 13, 1952, with Wayne Suttles, shows a similar accent, with the same Halkomelem-influence effects: [c] for /č/ ([xʷx̣ɛ́ctəm], [cxʷɪ́lmIn]), [c'] for /č'/ and /xʸ/ for /š/ ([c'ɪ́kʷəmɛʔxʸ]), [θ] for /c/ ([pɛ́·θtəl]), [θ'] for /c'/ ([kʷaθ'kʷəθ'áy]), and /a/ for /u/ ([ɬəɬák'ʷe]). None of these are replacements used everywhere by Agnes James; cf. [yIɬéxʷIč], [šyákʷIl], [sméṯəncut], [c'úc'um'ɛls], [sčúkʷələqs]. These influences as evidenced in place names are discussed for each place name in Galloway and Richardson 1983.

2.8. Lenis Allophones of /ɬ/. In the speech of GS and SJ /ɬ/ occasionally sounds somewhat like [s] or [š]. I believe phonetically it is [ɬ] with incomplete apical closure. There was no readily available symbol for this, so I have used [s̬ɬ] or [š̬ɬ]. I wondered at first why these didn't occur in the speech of LG. Then I found that all the examples of [s̬ɬ] and [š̬ɬ] are from texts, plus a few from longer sentences; we have no texts from LG and very few long sentences. Since the citation forms and usually the texts have clear [ɬ] in the same words, I believe [s̬ɬ] and [š̬ɬ] are occasional allophones of /ɬ/ in lenis pronunciation and free variation with [ɬ] in the environment of texts and long sentences. The lenis allophones usually cluster in adjacent sentences.

For example, GS has [ʔìɬ ʔəsn̥áɛ kʷ snəxʷíɬ kʷs qéx̣s snéxʷIɬ ʔìɬ ʔíš̬ɬæs ʔóx̣ʷ x̣éliᵊx̣] It was called /snəxʷíɬ/

(raiding party) when there were many canoes all going together to fight, [x̣ʷəm kʷs t'ó·nU̓mʔs kʷ snéxʷIš̬ɬ ....] Quickly the recognized the canoes ...., [mə s̬ɬčí·l tə yéqʷəɬtax̣] The Yéqʷəɬtax̣ arrived., [qəƛ'ós mæs t'wə p'Ís̬ɬənəm] and that they might be made aware. And SJ has [ʔíɬ ʔəy níčičim ʔés̬ɬiɬtən] A bunch of them are talking., They (many) are talking., [qéx̣ tə sθ'ú·mʔ s̬ɬiyéʔ kʷə ʔénu] There are lots of bones here., [ʔéx̣icɬɛ s̬ɬiyé kʷə ʔéno] Lie down right here!, and [ɬxélIš̬ɬæ^] (lenis second ɬ, almost s throughout) Stand up!

This variation is not found in Halkomelem.

2.9. Bilabial allophone of /xʷ/. Rarely /xʷ/ has a voiceless bilabial spirant [W] as an allophone, in free variation with [xʷ]. This may be an influence of Halkomelem as it is also found there (Galloway 1977:10-11). GS has [stíʔtiyUW] people and repeatedly [ʔóW] /ʔúxʷ/ (a morphophonemic variant of {ʔúx̣ʷ} go, going to). SJ has [kʷúWəc] silver salmon, coho. Other citations of these words have [xʷ]. The examples quoted here all have [W] after /u/ which may be significant, but more examples are needed.

2.10. Glottal Stop. Glottalized resonants occur phonetically in Nooksack but are extremely rare compared to clusters of resonant and glottal stop (ʔR and Rʔ, where R = resonant). These clusters cannot be analyzed as R' phonemes because it is impossible at present to predict on an entirely phonetic basis whether the ʔ precedes or follows the R.

Morphological factors influence the placement as well as the presence or absence of glottal stop adjacent to resonants. So do phonological factors such as the speed of speech, variability with a single speaker, variability between speakers, and degree of influence of Halkomelem and Lushootseed.

The few cases of [R'] (where placement of ʔ before versus after R is hard to determine and glottalization seems simultaneous) seem to either have creaky voice (glottal stricturing) throughout (simultaneous articulation) or to be heard as [ʔRʔ] (with or without creaky voice). By analyzing these cases as /ʔRʔ/ we capture that phonetic quality actually heard and need not postulate five additional phonemes, /m', n', y', l', w'/.

Although Amoss (1961:5) is quite clear that there are no glottalized resonant phonemes in Nooksack, she accounts for the variation in placement of [ʔ] in clusters with resonants as phonetic free variation [RʔR ~ ʔR ~ Rʔ] (Amoss 1961:7, 13). She also accounts for the variation in presence and absence of [ʔ] word-finally after a vowel as phonetic free variation (1961:7). I believe this variation and that of loss of ʔ in clusters is best described as morphophonemic and can be partially accounted for below by factors of tempo, influence of neighboring languages, and language extinction. Although in my opinion the variation consists of loss, addition, and rearrangement of phonemes and belongs in morphophonemics (not in the phonetics

and phonemics of section 2), a few tentative observations may be of interest here. More work remains to be done in collating variant occurrences and spelling of each morpheme and figuring out the morphophonemics and distribution of /ʔ/. There is also evidence of /ʔ/-insertion in some reduplication and as an intensifier. But based on collation and analysis of over 300 words with /ʔ/ in clusters or in final position a few things can be said here.

2.10.1. Before word boundary [ʔ] only occurs after a vowel or a resonant. In both cases it is aspirated, [ʔʰ], and elsewhere it is unaspirated (see 2.2). This points to /Rʔ/ rather than /R'/ since the aspiration occurs in positions predicted for /ʔ/ and since one would expect any aspiration of /R'/ (if even possible) to be uniform. [Rʔ] does not occur word-initially; this points to /Rʔ/ rather than to /R'/ since one would expect defective distributions more of clusters than of /R'/. There are a fair number of cases of [Rʔ] ~ [R] without semantic effect in the speech of all three speakers from which we have appreciable data. This may also point to /Rʔ/ rather than /R'/ since glottalization is historically conservative in Salish (see Thompson 1979, Galloway 1982); loss of /ʔ/ from /Rʔ/ is more likely than loss of glottalization from /R'/.

The clinching evidence against /R'/ in Nooksack however may be the fact that of the few cases of phonetic glottalized resonants, most, if not all so far, vary with cluster versions. In the following, a hyphen within square brackets

will show the speaker sounding out the word by syllables or syllabifying. SJ has [q'^{W}úl'Ux^{W}] (or [q'^{W}úʔl'Ux^{W}]) ~ [q'^{W}úlʔUx^{W} ~ q'^{W}úl-ʔlUx^{W} ~ k'^{W}úl'Ux^{W} ~ k'^{W}úl'əx^{W} ~ k'^{W}úlʔUx^{W}] dog salmon, [síl'ə ~ síʔl'ə ~ síʔlə] ~ lenis [síʔlɛ] grandparent, [ləʔáy'æy] (or [ləʔáyʔyæy]) ~ [ləʔáy'ey] Douglas fir tree (versus LG [sláyʔæyʔ^{h}] Douglas fir tree and SJ and LG [sláyʔ^{h}] Douglas fir wood or bark), [yəw'énʔmiˇnʔ^{h}] before (versus [yəwéʔnʔułɬ] /yəwéʔn-ʔułɬ/ first-born and LG [yəwéʔɛn] first); BE found SJ had [stúlʔæwʔ] with "(lʔ or ʔl or l')" where I transcribe SJ [stúlʔəwʔ^{h} ~ stúlʔɛwʔ^{h}] and LG [st^{h}úlʔæwʔ^{h}] river.

LG (my transcriptions again) has [ʔəy hə́ˆʔwʔənʔ^{h} ~ ʔəy hə́ˆʔwənʔ^{h}] (usually the latter) hunting, [sx^{W}ənə́ʔæmʔis] his power [a shaman's] (probably syllabified; the [i] is likely a speech error--there is usually no vowel with the third person possessive suffix), [sx̣óyʔyus ~ sx̣óyʔ-yus ~ sx̣áyʔ-yus ~ sx̣éyʔ-yus] head (versus SJ [sx̣eʔyú·s ~ sx̣eyú·s ~ sx̣eyʔús]), [tém'əš ~ témʔəš] (with creakiness or glottal stricture on the [m]) wish for something, [púyUn'] (creaky n) bend something, [x^{W}əhómin] (twice) ~ [x^{W}əhóm'in'] (twice) (['] mainly creakiness; LT notes "m̓ added on prompting on second set of renditions on tape") throat, windpipe.

These are the only examples I found of [R'] out of several hundred examples with [R?] and [?R]. I found no examples of [R'] in the words and texts (126 lines so far) of GS. LT transcribes more [R'] where I transcribe [?R] or [R?]; BE sometimes transcribes [R']; PA transcribes few, if

any, [R']. All four of us however transcribe many clusters, both [?R] and [R?]. The creakiness detected may be present rarely as an allophone of /?/, replacing [?] adjacent to /R/ as it occasionally replaces [?] between homophonous vowels (see 2.10.2).

2.10.2. Amoss 1961:7 describes [?] in free variation with glottal stricturing when between homophonous vowels. This seems to be an allophonic variant of /?/. It usually occurs concurrent with another phenomenon she reports (1961:15), that of "mirror vowels":

> Stress conditions the appearance of the so-called 'mirror vowels.' Phonetically the mirror vowels have the quality of the preceding primary stressed full vowel. Phonemically they can be subsumed under the schwa vowel. The combination of phonemic stress and the stylistic intonation patterns probably explain these phenomena, but the mechanisms involved are not fully understood.

Actually mirror vowels can be better accounted for morphophonemically. One source of mirror vowels is a group of suffixes with harmonic vowels, such as -V_1n (purposeful control) transitivizer; these exist also in Squamish (cf. Kuipers 1967:74-76, 71-73) and other Salish languages (but not in UHk). Another source is their insertion, morphophonemically, to break up some clusters of ?C; this can be seen to have happened historically as well, with Proto-Central Coast Salish *$\acute{V}_x$?C > Nooksack $\acute{V}_x$?V_xC in these cases (see Galloway 1982). Thus I phonemicize both /?/ and the mirror vowel. When [?] is replaced by glottal stricturing, the two identical vowels become one long vowel retaining stress.

This is one source of variation in presence and absence of [ʔ] but is phonemicized with /ʔ/ (to account for the creakiness). The regular UHk correspondence for this is /$\acute{V}_x$·/ with regular replacement of /ʔ/ before C by length. The UHk reflex would reinforce Nooksack variants with [$\acute{V}_x$·] and add pressure for loss of the glottal stricturing.

2.10.3. Variation in the phonemic presence and absence of /ʔ/ in postvocalic final position or adjacent to resonants can be seen in each of the speakers. Absence of /ʔ/ is sometimes conditioned by rapid tempos, sometimes by Halkomelem influence, sometimes by language loss (memory), and sometimes reflects free variation. In general, retention of /ʔ/ is stimulated by careful pronunciation, by slow tempos, and probably by influence of Lushootseed and Straits. Insertion of extra /ʔ/ is apparently sometimes conditioned by syllabified pronunciation and by overcorrection.

Such variation is found within the speech of individual speakers and between the speech of different speakers. Since factors of language loss and Halkomelem influence are causes of /ʔ/ loss, it seems best at present to show this variation phonemically where it occurs and spell it with //ʔ// morphophonemically. Comparative work with sister-languages (other than UHk) will allow us later to see where Nooksack has added or lost /ʔ/ adjacent to resonants. One example (SJ [stákIn^{ʔh}] stocking, socks) suggests that some cases of R?# may be semi-automatic or optional addition of /ʔ/ in this position as a morphophonemic rule; the English

source of this borrowing certainly has no [ʔ].

Here are some examples of /ʔR ~ R/, /R? ~ R/ and /V?# ~ V#/. Variation here is conditioned by tempo and carefulness. SJ has [sx̣eʔyú·s ~ sx̣e(ʔ)yú·s ~ sx̣eyʔús] head (in the second alternate, /ʔ/ disappears at faster speed), [tænʔ ~ tənʔ ~ tən ~ tn̩] my (present, visible, or unspecified) (arranged in order of increasing tempo and increasing frequency of attestation), [šx^{w}UmʔníkW] (slow) ~ [šx^{w}UmníkW] (normal or fast), [ʔíšil] corrected to [ʔíšilʔ] to paddle (a canoe), [ʔəyʔ ~ ʔəy] keep on (continuative preclitic) (the second alternate especially in texts and rapid sentences), [nəč'úʔ ~ nəč'ú] one. LG has [ʔəyʔ ~ ʔəy] keep on (continuative) (first alternate in slow speech), [sx^{w}ú˘nʔæn] (extra slow) ~ [sx^{w}ú˘næn] ashes (first alternate only at last of four repetitions), [məʔémin] corrected to [məʔéʔminʔ] (at slow speed) small, [ʔəy^{+} yÍ^qʔ] (normal tempo) ~ [ʔəyʔ yÍ^qʔ] It's snowing., [x^{w}iyéʔyo ~ x^{w}əyíʔyu^{w}ʔ ~ x^{w}əyíʔyu] fly (insect), [x̣éčuʔ ~ x̣éču] lake. GS has [ʔay níʔnæʔnəm ~ ʔay nínænəm ~ ʔæy nínænəm] it is (still) called, [łčíl ~ łčílʔ] get here, arrive, [tíyæʔ ~ tíyæ] that, [łiyéʔ ~ łiyé] this, [təlf˘ʔ ~ təlf] from; than.

Upriver Halkomelem influence may be partially at work to drop /ʔ/ in cases like GS: [stí·yUx^{W} ~ stíʔyux^{W}] person (UHk [mIstí·yUx^{W}] person), [ʔéwæ] no, not (UHk [ʔéwə ~ ʔéwæ] no, not versus SJ [ʔéwʔə], LG [ʔéwʔæ˘ʔ ~ ʔéwæ˘ʔ ~ ʔéwə˂ʔ ~ ʔéwə] no, not), [q'éməy ~ q'éməyʔ ~ q'éməɛyʔ] adolescent virgin girl (versus LG [q'éməæyʔ], SJ [q'émʔæyʔ ~ q'ém-ʔməyʔ

- θə q'ə́(·)məy?]) (UHk [q'ə́·miy - q'ə́miy] adolescent virgin girl; SJ's [θə] = UHk [θə] the (female) and shows the noun after it may also be influenced by UHk); GS [swə́y?qə] man, male (versus LG [swíy?qə?], SJ [swə́y?qə? - swí?yəqə - swíy?qæ]) (UHk [swíyəqə - swíyqə] man, male); LG [cə́·t] dark (versus LG [cæ?tí·l] getting dark)(UHk [θə́·t]/θɛ́·t/ to be dark, [θətí·l] /θətí·l/ to get dark), LG [pí·k^{W}ən] first, then [pí?k^{W}ən] barbecue stick (split kind) (UHk [pí·k^{W}əl] barbecuing stick (split then tied)).

On the other hand, syllabified pronunciation or over-correction probably accounts for insertion of extra /?/ in the following examples: LG [łəq'?ə́t] wide (cf. LG [łq'ə́tos] flattened forehead), [q'ə́læmæy? - q'ə́læ?mæy? - q'ə́?læ?mæy?] girls (each alternate was a correction of the previous one; the /?l/ is probably overcorrection and /?m/ may also be overcorrection, see LG [q'ə́mæy?] [adolescent virgin] girl, but they may be required by the infixed plural), LG [šəm?ə́·n?tUl?] each other's enemy (but just previously [šəmə́·n] enemy), [yəq'-?ós - yəq'ós] to sharpen something (cf. also UHk /yə́q'əs-t/ to sharpen something), [c'ówix̣ - c'ów-?wix̣] (woven) split cedar basket, GS [qələ́?wiyæ? - qələ́?wiyɛ] Beaver (final /?/ is probably overcorrection).

Insertion of extra resonants is also common in syllabified pronunciation, for example, SJ [qəl?ú·m - qəl-?lú$^{\smile}$·m] eye, [q'ə́m?æy? - q'ə́m-?mæy?] adolescent virgin girl (the /m?/ may be overcorrection, see SJ [q'ə́q'm̥əy?] little girl), [č'ə́m?i^{ə}q^{W} - č'ə́m-?mi^{ə}q^{W}] great grandparent; LG also has

[sx^{W}ənə́?əm?mis] his power (of Indian doctor), [sx̣óy?-yus - sx̣áy?-yus - sx̣ə́y?-yus] head (for the vowel compare UHk /sx̣óy·əs - sx̣áy·əs/, Ld /sx̣əy'ús/ head).

Besides clusters with /?/ within single morphemes there are clusters with /?/ formed due to affixation. (This too is morphophonemics but may be of passing interest here.) Clusters can be formed through prefixing as in SJ [tx^{W}?í·n?əwUt - tx^{W}í·nwət] do what?, say what? with {tx^{W}-} (verbal prefix) or [stí?ti?yix^{W}] /s-tí?-ti?yix^{W}/ people with {C$_1$V́$_1$C$_2$-} (plural) or LG [yí·?yox̣^{W}ən?] /yí?-yox̣^{W}ən?/ small arrow with {C$_1$í?-} (diminutive). Clusters can be formed through infixing; there is some evidence of a {-?-} infix (intensifier) as in LG [łiy?ə́?čən] I'm right here. (versus LG [łiyə́(?)čən] I'm here.) or SJ,GS,LG [hí?k^{W} - hík^{W}] to be big (compare UHk /hík^{W}/ to be big versus /hí·k^{W} - hí:k^{W}/ to be really big; this {-?-} intensifier may also occur with diminutives (i.e., both C$_1$í- and C$_1$í-?- may occur with a difference in meaning). Suffixes with initial /?/ can also produce surprising clusters, as in SJ [q'əp?uw?íl - q'əp?əw?íl] (in untranslated text, gloss probably come gather, cf. SJ [q'épənčæx^{W}]/q'ép-ən-čæx^{W}/ gather it! and SJ [LT] [ƛ'æpo?íl] coming down where /ƛ'ə́p/ is down, deep, low and the suffix must be come, coming); LG has [łə́q'?ɛš] to weigh something down and [łə́q'?æ?wil] to lie down (cf. LG [tIsə?wíl] get close to something from root [tís] close, near)(cf. UHk [łə́q'ət]/łɛ́q'-ət/ lay something down). These examples with stop plus /?/ I think

are unusual, perhaps only tolerated in careful speech; an example of the more usual process with /ʔ/ being dropped can be seen perhaps from an example in a text by GS with [ɬíɬq'emʔí] from /ɬíɬq'#(ʔ)emʔí/ always come [often come].

A few final distributional remarks about /ʔ/. It is frequently initial. But two words so far can occur with vowel initial, /ʔey ~ ʔæy/ keep on; (continuative) and /ʔemʔí/ ~ /hæmʔí/ come, come to, coming (to). In both cases /ʔ/ can be dropped in texts or at rapid tempos and the word joins with the previous word phonologically, as in GS [ƛ'ósɨs ɬóq'semi ɬčíl] /ƛ'ú-s-es ɬóq'-s emí/ when they (come to) get here and GS [qeƛ'esʔíswm̩əy níčIm] and so saying.

/ʔ/ frequently occurs between different vowels as well as between homophonous vowels. It can medially or finally precede any consonant, even /h/ (LG has [spɨ̀nwæʔhóɬ] last year, GS has perhaps [spúʔh] wind if not [spúʔʰ]). It can medially follow any consonant (especially in reduplication) but is rare and perhaps restricted after stops (only [pʔ] and [q'ʔ] are attested, as seen). Word-finally it can only follow vowel or resonant. In clusters with only /R/ and /ʔ/, /ʔR/ is much less common than /Rʔ/. SJ has seven cases of /ʔR/ to 96 of /Rʔ/ and /RʔC/; LG has 18 cases of /ʔR/ to 116 of /Rʔ/. GS has 12 cases of /ʔR/ to 34 of /Rʔ/. In medial or final clusters of three or more consonants /ʔ/ is rarely the first member (LG [híʔkʷšən] big feet); it is usually the second (GS [q'ólʔxʸtÍn] little [canoe] mat, [q'ólʔmin] camp, LG [hólʔkʷ] breaking, bending, folding)

especially with resonants where RʔR and RʔC are normal. /ʔ/ might even migrate to second position in some cases. In final clusters with /ʔ/ and /R/, /ʔ/ only follows /R/.

2.11. Syllabic Nasals and Lateral [m̩, n̩, l̩]. At normal to fast tempos unstressed /e/ is optionally dropped in certain environments (let M here stand for /m/, /n/ or /l/, C for consonant, V for vowel):

V́C(C)_M and (C)C_M(C)V́ (for LG, SJ, GS)

CC_MCCV́ and #C_n# and C_MVCV́ (for SJ).

This is really a morphophonemic rule. The results plus (for GS) the environment VCMV́(C) form the input attested so far for the phonemic rule:

2.11. /m, n, l/ ⟶ m̩, n̩, l̩: VC(C)_, (C)C_(C)V́ (for LG,SJ,GS)
CC_CCV́, #C_#, C_VCV́ (for SJ)
VC_V́(C) (for GS).

For example, LG has [hóčɨm ~ hóčm̩] water (in sentences), [ʔey ƛ'íƛ'l̩exem] a little crackling, [skʷn̩tǽ·l] a fight, [temʔxócem-mǽ·s ~ tɨmʔxócem·æs ~ tm̩ʔxócemæs ~ tm̩xócemes] (variants shown at increasing tempos) when it's wintertime, [kʷn̩ǽʔ] to take something, hold something.

SJ has [q'ǽq'm̩eyʔ] little girl (for ex., seven yrs.), [č'm̩šó·ycin] lips (both), [sqʷm̩á·yʔ] dog, [qʷeníqʷšn̩] ankle (cf. LG [qʷn̩ʔiᵉqʷšn̩] knee), [sp'l̩ʔxʷǽ·m] lungs (cf. LG [sp'ólʔxʷem] lungs), [tn̩] my, [sq'óʔ ƛ'n̩uwí] along with you.

GS has all his citation forms too slow (in the tape available) to show any examples of this rule. In texts,

however, with faster tempos, he has [qəƛ'as?Ísn̥æ] ([a] ~ [ə], final [æ] ~ [ə] ~ [a])(UHk influence) and then (third person subject), [?əsčn̥?á·w?əs] he was lying down, [tn̥fx^{w}] earth, land, territory, [?ɛsx̣əlx̣əl?áčšn̥] (PA has č') with his legs crossed, [sn̥ét] night (cf. LG [snét] night), [?əsn̥é] to be named (cf. LG [sné] name).

Three additional rules conditioning resonants are given in Amoss: /m/ → ^{m}b: #__V occasionally, /w/ → u: V__, and /y/ → i: V__. These do not seem necessary as I found no evidence of them in my transcriptions nor in those of LT and BE.

2.12. Stress and Length. Amoss 1961:4-5 discusses Nooksack stress. As she points out, raised relative pitch and increased vowel length are features of primary stress and raised relative pitch with no increased vowel length are features of secondary stress. Also as she points out, lack of stress dulls vowel quality and reduces length and pitch (pitch falls three to five tones below that with primary stress). She also notes that monosyllabic words regularly get primary stress when spoken in isolation. Of course with either stress comes increased relative loudness. Amoss also reports (1961:15) that ŚS̀ is the most common stress pattern, ŚS is less common, S...Ś is also possible, S̀Ś also occurs, and $S_1\acute{S}_2$ can occur when S_2 is a stressed suffix (S = syllable here).

My findings confirm most of Amoss's conclusions but differ in a few places. Neither I nor LT or BE found secondary

stress to be common. It has the qualities mentioned but is rare and not distinctive (phonemic) at the word level. In the cases where it occurs in citation forms it is analyzable as optionally present or absent (for example in the environments _ŚS and ŚS(S)_). I did not find it myself in ŚS or ŚS̀S or S̀Ś in the words quoted in Amoss 1961 nor in any others, although it may occur in rare cases. So at word level [`] is predictable and non-phonemic in the speech of GS, SJ and LG. At sentence level [`] is more frequent (even in sentences of only two words), but it is an allophone of /´/, occurring in normal and rapid speech in free variation with [´] on monosyllables adjacent to words with /´/.

For example, SJ has [spè?æcú·lɬ] bear cub, [swìy?qə?úlɬ] little boy, [hòčəmélí] pail, [sxè?xəsnét] Sunday, [ɬq'áčisèɬ] five times, [k^{w}Unə́'tuw?èl?] get married (lit. "take each other"), [?ìɬ k'^{w}ésil tə swéyil] It's hot today., [?ìɬ ?èy? čílləpəm tɬn məqsə́·n] My nose is tickling., and especially [č'ə́n? čə ?íɬ ?éy x^{w}é] (very slow) - [č'ə́n?čə ?íɬ ?èy x^{w}é] (normal tempo) I'm really hungry. The other speakers confirm these patterns, as in LG [hìk^{w}čIsčə́·n] My hands are big., [?əsc'íx^{w}nituw?èl?] they pity each other, [stèəm məmó?oq^{w} k^{w}ɛ cíyɛ] What kind of bird is that?

My findings also confirm the raised pitch (by the amounts Amoss mentions) and the increased vowel length with /´/. Length seems to be increased about 1/2 mora ([·/2]) at normal tempos and about one mora in slow tempos. GS often

doubles these lengths. Vowel length is increased however only for (largely tense) vowel allophones [i, e, æ, u, o, a] and not for (largely lax) [I, ɛ, ɨ, ə, ʌ, U, ɔ]. This is similar to Upriver Halkomelem, where /·/ only follows the former group plus [ɔ] (the latter group except [ɛ] and [ɔ] are all allophones of /ə/ in UHk). However in UHk length is phonemic; there it can even follow consonants. In Nooksack length is never found after consonants except in hyper-slow and/or syllabified pronunciation. In my transcription of Nooksack I have seldom written 1/2 mora length (I had not figured out a way to notate it) but often noted it as V· ~ V.

One influence from Upriver Halkomelem can be seen here and there in the speech of EF and LG. That is the influence of UHk phonemic pitch-stress or tone: /ˊ/ there is at a pitch five tones above unstressed, /ˋ/ is at a pitch three tones above unstressed, and /ˆ/ has an allophone (or allotone) [ˆ] high-falling or [$^{5}\searrow$2] tone on long vowels). In Nooksack /ˊ/ remains pretty well level on long vowels, even at slow tempos. But under UHk influence, Nooksack speakers LG and EF occasionally use high-falling pitch on long primary-stressed vowels. This is sometimes noticed and corrected by the speakers. For example, LG has [yîˑʔyəx̣^{w}ənʔ] corrected to [yíʔyəx̣^{w}ənʔ] small arrow, [čîˑtm^{y}ix^{w}] horned owl, [tû:x^{w}héˑɬ] nine times; EF has [sθôˑnəɬ] (personal name of Esther Fidele). LG has fewer V· and more V·/2 than does SJ or GS.

Examples of length include SJ [ɬčíˑl] arrive, [k^{w}əqˈéˑl] getting white, [cˈæˑ/2liʔ ~ cˈæliʔ] heart, [qˈ^{w}Ulæˑnʔ]

ear, [sq^{w}ṃáˑyʔ] dog, [qəlʔúˑm] eye, [čˈṃšóˑycin] lips (both); GS has [pˈíˑčˈt] charcoal, [qˈəʔéː:læm] (hyper-slow) ~ [qˈəʔéˑləm] (normal tempo) old, [sx̣pˈáˑm ~ sx̣pˈáˑ/2m] cockles, [qˈ^{w}óˑy ~ qˈ^{w}óˑ/2y] die, [sóˑtič] north wind, [x̣áˑƛˈθut] get rough (wind, water), [stæ̂:x^{w}əɬ] children, [sqəlˑæw̓ʔ] beaver, [q^{w}óq^{w}əlˑæ] hemlock, [qénˑUx^{w}] mouth [sic? for greedy]; LG [ʔúˑ/2lɛnɛʔ] to hear, [cˈəx̣téˑ/2n] poison (noun), [ɬəčíˑl] get here, [ɬqˈéˑlnəx^{w}] know it, [hóˑˆn] fire, [wɨlˑæp] (hyper-slow) ~ [wɨlæp] (normal) you (pl.), you folks, [tɨmʔx̣écəmˑæs] (hyper-slow) when it's wintertime.

2.13. /i/. If Q = dorso-postvelars, /i/ has allophones

[e] ~ [i^{ə}]: Q,h,ʔ__Q

[i^{ə}]: elsewhere __Q

[e] $\overset{f}{}$ [i]: elsewhere Q,h,ʔ__

[I] $\overset{f}{}$ [Iˆ] $\overset{f}{}$ [iˇ] $\overset{f}{}$ [i]: elsewhere unstressed

[i]: elsewhere stressed.

These rules hold for GS, SJ and LG, but there are some differences between speakers in which variants are preferred in the various environments. For all three speakers [e] is the preferred variant after unlabialized dorso-postvelars, [i] or [i^{ə}] (as required) is preferred after labialized dorso-postvelars and glottals, and [I] is preferred adjacent to /š/ (or /x^{y}/). But LG prefers [i] to the lower allophones in unstressed environments not adjacent to postvelars; GS and SJ have [i] and [I] about equally in that position.

LG sometimes has no glide with [i] before Q. In some cases the attested variation confirms that it is [I] and not [ɪ] present, the latter veing phonetically close to [I] and yet being an allophone of /ə/. In a few cases [əy] also comes close to sounding like [ey] in unstressed position.

Examples from SJ include: [sqʷfᵊqʷəməy?] little dog, [q'éx̣el?] "kinda black" [getting black], [ɬx̣élIšɬæ^] stand up!, [sóq'ʷeys] his brother (probably [ey], cf. LG (LT) [súq'ʷəy'] younger sibling), [?ey?íws] right-hand, [qʷíc] drown, [x̣ʷfl?it] beat someone up, [šáqʷil] village near Everson, [stiᵊqíw] horse, [č'ám?iᵊqʷ] great grandparent, [?iɬ ~ ?íɬ] ~ [?Iɬ](less common) ~ [?èɬ] (preclitic), possibly (new information), [snéxʷiˇɬ ~ snéxʷIɬ] canoe; car, [ƛ'ə?élIɬtən] them (obj. of preposition), [?éliɬtən] them, [sqʷəhélI^č ~ sqʷəhélič] village near Lynden, [təléwIl?] to run, [čélIš] hand, [yənís] teeth, tooth, [čmšó·ycin] lips (both).

GS has [qʷiᵊqʷtímxʸIn] raining with big drops, [making it foggy], [wəhíᵊq] to shove off (in a canoe), [č'ɛhé·təm ~ č'ɛhítəm] give thanks, [x̣éliᵊx̣] to fight, [q'əʔé·ləm] old, [θqé·l] to climb, [q'ʷím] get out of a canoe, [θ'íᵊx̣ʷnitəm] he is pitied, [lʸfᵊqʷil ~ lʸfᵊqʷIl] slacken, get quiet, calm, [?iɬ ~ ?Iɬ] (preclitic), [snéxʷIɬ ~ snéxʷiɬ] canoe, [snícIm ~ snícim] word, what was said, [qələɬómIš] ugly, bad-looking, [q'él?min] a camp.

LG has [x̣eq'éw?sæ^m] to scratch the body, [qéx̣ʷos] blind, [héy?tən] battle club, [q'ésin] to tie something (with

cord, string, etc.), [?éx̣ᵊic] to lie down, [?é?ɛx̣ec] lying down, [?íᵊx̣ʷin] to throw something, [cíᵊx̣ ~ cíx̣] (water) spring, [míᵊq' ~ míq'] to sink, [q'ʷíləm ~ q'ʷéləm] to roast, [cíqʷin] to dig (no [ᵊ]), [t'ílImɬæ] sing! (cf. SJ [t'ílim] sing), [stéčiˇws ~ stéčI^ws] body (of a person), [mIšč'é·n] louse, [šIšk'ʷóm?] to swim for pleasure, [skʷéyil] day, [k'ʷik'ʷčúsəm] mirror, [hílikʷ] glad, [?əstís] close, near, [t'íčim] to swim.

The influence of Upriver Halkomelem with [I] as a stressable allophone of /ə/ probably serves to produce some of the few examples of [í] which should be [i] and of [I] which should be [ɪ]. For example, GS has [yíθImtxʷ] told them, notified them (LG has [sʲyícəm] message, UHk has [yíθəstUxʷ] /yéθə-stəxʷ/ tell someone); GS has [?əstís ~ ?ɛstís] it's near, nearby (LG has [?əstís] close, nearby); LG has [cícəqət] little tree and [ɬíptɪn] eyelid; SJ has [tIpsé·m] whole neck, [tIn] (less common) ~ [tən] my (present, visible, or unspecified). Compare UHk [tís] near, [θíθəqət] little tree, [ɬíptəl] eyelash, eyelid, [típsəm] back of neck, [tIl ~ tɬ] my (present, visible, or unspecified proximity).

2.14. /æ/. Under stress /æ/ has the allophone [æ] or sometimes [æ^]; when unstressed it has allophones [ɛ], [ɛˇ], [æ^] and [æ] in free variation but with [ɛ] and [ɛˇ] predominating at normal to fast tempos and [æ^] and [æ] predominating at slow and hyper-slow tempos. This differs

somewhat from the Upriver Halkomelem allophony of /ɛ/ which has [æ] ~ [ɛ] ~ [e], with [æ] largely stressed and [ɛ] largely unstressed but both conditioned also by adjacent consonants and not by tempo; UHk [e] occurs before /y/ and after certain consonants (see Galloway 1977). In Nooksack the situation is complicated on the morphophonemic level by a rule that unstressed //ə// → /ə/ in free variation with /æ/ at slow tempos. The rule is not present in Halkomelem.

Some Nooksack allophonic examples from SJ include: [ʔímɛc] grandchild, [kʷéyəlɛs] tomorrow, [mɛl ~ mɛlʔ] (unstressed) just (merely), [cɛmém] twice, [ɬixʷéɬ] three times, [túˑxʷɛɬ] nine times, [spéʔæc] bear, [cʼéliʔ] heart, [xpéyʔæy] red cedar tree, [cémæƛʼoˆ] she, [kʷéʔæ snéˑ] your name, [tíyæ] that (male), [cíyæ] that (female), [méˑn] father, [čǎ̈nʔčæ] (hyper-slow) ~ [čʼénʔčɛ] (normal tempo) I am really.

GS has [tɛmæƛʼó] he, that (male), [qəléʔwiyɛ(ʔ) ~ qəléʔwiyæ(ʔ)] Beaver, [témɛm] hollared, [tɛmæƛʼóƛʼum] they, those (u ~ ə), [mɛ ~ mæ] come, [čʼɛhéˑtəm] give thanks, [tɛníməɬ] we, [θəwétčɛɬ] we respect, we take care of, [ʔæsʔístɛ ~ ʔæsʔístæ] like that, that way, [sχ̣ʷiyémʔ] legend, [sn̩ét] night, [hæmʔí] was still coming, [kʼʷétʼən] mouse, [kʷómæ] go far back (from the water, to the mountains).

LG has [sméneˇš] tobacco, [kʷósɛn] star (LG says "...æn is careful"), [skʷéʔɛˇm] basket with lid, [tʼéʔɛčʼ] stabilizing barbecue stick, [qʼépʼɛˇn] to tie something together (two canoes, a package, etc.), [šəméˑnčɛɬ] our enemy, [hɛʔlí] alive, [lélæmʔ] house (cf. SJ [léləmʔ]), [kʼʷéxʷæʔ] box, [sélæq] stump, [ƛʼæʔéχ̣ən] invitation, [tíyæčIs] (slow) strike back (the last five words elicited one after another and all somewhat slow in tempo), [ƛʼéɬɛm ~ ƛʼéɬæˆm] salt.

There are a few examples of [é] (as in UHk). Some may be influenced by the UHk cognates and some may be my errors for [éˆ] or [ɪ]. For example, SJ has [sʔéƛʼqIl] outside (UHk [sʔéƛʼq] outside), [ʔénɛc] me (UHk [ʔélθɛ] me), [pénɛt] plant it (cf. SJ [pənʔélIkʷ] to plant with same root), [cémæƛʼo] she, [témæƛʼo] he, [yéɬ sʔís] he just (UHk [yéɬ sʔIs] he just), [téʔɛ] your (present, visible, or unspecified) (cf. SJ [kʷéʔæ] your). LG has [xʷʔéčʔɪč] to stammer, stutter (UHk [ʔíc?Ic] to stutter), [ʔénmæʔ] very, really (probably [éˆ], cf. GS [ʔénčəxʷ mæ ʔæskʼʷésn̩] you are so pot-gutted [big-bellied] where [ʔén ... mæ] means so), [tépsæm] neck (cf. SJ [tIpséˑm] whole neck, UHk [típsəm] back of neck). GS has [téʔɛ sɬénˑɛc] your buttocks (probably [téˆʔɛ sɬénˑɛc] cf. UHk [téʔ sɬélˑəc] your buttocks and LG [sɬélnəc] rear end (whole bottom)).

Here are a few examples showing the morphophonemic alternation of unstressed //ə// → /ə/ ~ /æ/ in slow tempos. SJ has [yənís] ~ [yɛnís](slow) teeth, [ʔəlíləʔ] ~ [ʔɛlíləʔ] salmonberry, salmonberries, [tə] ~ (slow) [tɛ] the (present, visible, or unspecified proximity), [ʔn̩ sƛʼíʔ ~ ʔən sƛʼíʔ ~ ʔɛn sƛʼíʔ] (last alternate is hyper-slow) I want, [sʔíləltxʷ] (fast) ~ [sʔíləltxʷ] plank, board, [stúlʔəwʔ ~ stúlʔɛwʔ]

river, [tənuwí ~ tɛnuwí] you (sg.), [x̣ʷí·l?icæs ~ x̣ʷí·l?icɛs ~ x̣ʷí·l?icəs] they beat me up, [ƛ'ə?énɛc ~ ƛ'ɛ?énɛc ~ ƛ'æ?énɛc] me (obj. of preposition), [ƛ'nuwí ~ ƛ'ɛnəwí] you (sg., obj. of preposition), [ƛ'ə?ælIɬtən ~ ƛ'ɛ?ælIɬtən](slow second alternate) them (obj. of preposition). GS has [s?í·ɬɛn ~ s?íɬən] food, and a number of other examples, as does LG.

2.15. /ə/. /ə/ has allophones [ʌ] (lower mid, back) adjacent to dorso-postvelars and elsewhere under stress, [ɪ] (lower high, central) often in free variation with [ə] elsewhere adjacent to and especially between /m, n, t, p/, and [ə] (mean mid, central) elsewhere. In a few rare cases [ɪ] between /m, n, t, p/ even occurs under stress (as in [tɪ́psæm] neck, SJ [mɪ́n·ɛ?] offspring, LG [ɬɪ́ptɪn] eyelid and [spɪ́nwæ ~ spɛ́nwæ] year). Although I have transcribed [ʌ] as [ə] everywhere for orthographic reasons, it was with the proviso that it represented [ʌ] when under stress and also when adjacent to dorso-postvelars. Examples are plentiful above in these environments and also of [ə] elsewhere. A few examples of [ɪ] then will be given here.

SJ has [tɪn] my (present, visible, or unspecified), [tɪ ~ tə] the (present, visible, or unspecified), [s?íɬɪn] (so also LG) food,[kʷɪns] that I. LG has [wɪnɛ́təm] someone is invited (for ex. by a missionary), [hɔ́čɪm] water, [?íɬčɪn] I (auxiliary verb; new information?), [kʼʷɔ́ɬɪt] spill something, [?ɛstɪsɔ́sčɛn] I'm poor., [šxʷqʷɔ́ltɪn] voice. There are a few examples suggesting that /w/ preceding (but not following) may have to be added to the [ɪ] environment. LG has [wɪlɛ́əp] you folks, [wɪɪ nəwí] That's yours., [ƛ'ɔ́wɪls] to bark. But these may be mistranscriptions for [ə].

2.16. /u/. /u/ has allophones [u] in free variation with [o] (and [uˇ] and [oˆ]) in stressed environments, [U] in free variation with [u] and [o] in unstressed environments. Though Amoss 1961 reports an allophone [ɔ] adjacent to postvelars, I have so far found it in only three words, GS [qʷɔ́qʷəl·æ ~ qʷɔ́qʷælæ ~ qʷɔ́qʷəliy?] hemlock, LG [?əsxʷɔ́xʷcʼ] foolish, crazy, and SJ [kɔ́fi] coffee. The first, hemlock, compares to Squamish /qʷáy?ci/, Sechelt /qʷə́l?-ay/ hemlock; the second compares to UHk /s-xʷá·xʷəʼ/ foolish, crazy; the third is English (not a borrowing from English because a loan would shift English /f/ to Nooksack /p/). More examples are needed.

As mentioned above in section 1, GS has [o] much more frequently than [u] (in more than twice the words), while in the speech of LG and SJ they occur in an about equal number of words. [U] is the least common allophone in the speech of GS (appearing in less words so far than unstressed [u]), while it is fairly common in the speech of SJ and LG (appearing in more words than unstressed [u]). In the speech of LG [U] is much more systematically the unstressed allophone of /u/, in preference to [u] at least.

LG has [yúƛ'Uˇn] to rub something, [túpUn?] to hit someone or something with fist, [túl?Un] to think, [húnUnɬæ]

burn it!, [túq'^{W}Um] to cough, [púq'^{W}Um] to foam, [túsUn] throw it (over here), [púwUt ~ púw?Ut ~ pú:t] look at something, [tú$\dot{x}^{W}$ic ~ tU$\dot{x}^{W}$íc] bow (for arrows), [s?écos ~ s?écUs] face, [$\dot{x}^{W}$óq'^{W}o˘m] to snore, [yóq'^{W}om] to sweat, [c'óɬom?] to feel cold, [yóx^{W}yox^{W}ən?] arrows, [t'onómot] understand, [?ɛsq^{W}ónustəwɛl?] (both [o] and [u] are clear) They're hugging each other., [pónux^{W}čæn ~ pónUx^{W}čæn] I saw it., [k'^{W}ik'^{W}čúsæm] mirror, [s?éx^{W}o?] clam, [čəw?ús] close to the river bank, [šuɬmí˘n] take care of, look after, [mó·s] four, [mu˘sé·ɬ] four times.

SJ has [?ú$\dot{x}^{W}$ ~ ?ó$\dot{x}^{W}$] go, [honéli ~ hunéli] fireplace, [hóy ~ húy] done, already finished, [ƛ'ú ~ ƛ'ó] that's, [k^{W}Um?] (future tense) (all speakers pronounce with [U]), [sqéwUc] potato, [néːnætUx^{W}] morning, [šx^{W}Um?ník^{W}] uncle, aunt, [q'^{W}Uléˑn?] ear, [k^{W}úx^{W}əc] coho salmon, [músmus] cow, [stiqiw?úlɬ] colt, [c'ók^{W}s] seven, [c'Uk^{W}sélí] seven people.

GS has [q'^{W}ó·y ~ q'^{W}ú·y] die, [q$^{w/2}$o?ó·p] crabapple, [syúwəns] his spirit song, [spú?h] or [spú?] wind, [tíyæno ~ tíyɬnu] those, [k^{W}ómæ ~ k^{W}úmæ] go back far, [t'ó·nUm ~ t'ó·num] it was understood, recognized, [sq'é·lo(w)?] food put away, [?əyx́ɛlIx̣tum?] fighting, [yìθəmtó·m] they were told, [hó·nčup] build a fire, [t'onómut] realized, [t'ónUx^{W}ès] they understood it, [ɬómUx^{W}] to rain, [x̣áƛ'θut ~ x̣áƛ'θot] get rough-flowing, turbulent.

There are a few unexpected cases of [Ú], some perhaps influenced by Halkomelem [U]/ə/, some perhaps mistranscribed for [ú˘] or [ó^]. LG has [syÚ^q^{W} ~ syóq^{W}] burned (one would

expect Nooksack ?ɛs- ~ ?əs- (stative) here, UHk has s- (stative)); SJ has [?Ú$\dot{x}^{W}$ ~ ?ú$\dot{x}^{W}$ ~ ?ó$\dot{x}^{W}$] go and [hÚn ~ hún ~ hón] burn (of fire) (in both words the U-alternate is quite rare), [$\dot{x}^{W}$Úm ~ $\dot{x}^{W}$ém] fast, [$\dot{x}^{W}$Um$\dot{x}^{W}$Úmtx^{W}] hurry up, do it faster, [mÚk'^{W}] all (but cf. LG [mók'^{W}], GS [mÚk'^{W} ~ mók'^{W} ~ mék'^{W}] all); GS also has [mæmÚk'^{W}] they all.

2.17. Marginal [a]. Most, if not all, cases of Nooksack [a] can be shown to be borrowing from or influence by other languages (Halkomelem, Lushootseed, English, perhaps others). Nooksack, like Halkomelem and (partially) Straits, participated in a shift from Proto-Central Salish */a/ to low front vowels, variously written /e/, /ɛ/ or /æ/ (see Galloway 1982). This left Nooksack and Halkomelem without an /a/. Pre-Halkomelem subsequently shifted its */u/ to /a/, filling that slot. But Nooksack retained its /u/ and its empty /a/ slot. Thus if Nooksack has any cases of [a] they are conceivably rare survivals of */a/ (which should be shown as phonemic /a/) or borrowing or influence from Halkomelem /a/ (where other Salish languages have /u/), from Straits /a/, from Lushootseed /a/ (where Halkomelem has /ɛ/), or from non-Salish [a].

One possible synchronic source of Nooksack [a] is /?əy(?) ~ ?æy(?)/, a preclitic or prefix now used as an inflection to show continuative aspect in Nooksack. It seems related to UHk [?éˑy]/?éˑy/ keep on, which is neither a prefix nor used as an inflectional aspect marker. At any rate, the Nooksack word sometimes appears as [?ay(?)].

For example, LG [ʔíɬ ʔəy hé́ʔwən̓ʔ] (with my note that ʔəy sounds much like ʔay throughout this and several other interviews) he's out hunting, LG [ʔay cóʔot ~ ʔəy cóʔot] talking; GS has [ʔay θóʔot] saying, [ʔayx̣élIx̣tum̓ʔ] fighting [being fought?], [ʔəyx̣élIx̣] fighting, [ʔaynɪ́(ʔ)næ(ʔ)nəm ~ ʔæynɪ́(ʔ)næ(ʔ)nəm ~ ʔəynɪ́(ʔ)næ(ʔ)nəm] it's been named, called.

Other cases of [a] include SJ [yáswə] must be, (and in the same sentence) [mayúc] always (elsewhere SJ [mæyúc]; these could be {ma ~ mæ} + {yúc}), [sʔáx̣ʷoʔ] small clam (versus LG [sʔéx̣ʷoʔ]), next utterance in the interview includes [tqáčiʔiqʷ] eight dollars, [láy] only (and four utterances later) [stákɛnʔ ~ stákInʔ] stockings, socks. Compare UHk /yáswə/ maybe, perhaps, /wə-yáθ/ ~ /yáθ/ always, /sʔáx̣ʷə/ small clam, /tqácá·s/ eight dollars, /wə-láy/ ~ /láy/ only, /stákʸəl/ stocking, socks. For Lushootseed influence see SJ and LG [sqʷm̓á·yʔ~ sqʷm̓əyʔ] dog (compare Lushootseed [sqʷəbáyʔ], UHk [sqʷəmé́·y] dog).

LG has [sx̣óyʔyus ~ sx̣áyʔ-yus ~ sx̣éyʔ-yus] head, [ʔeyúˇ(ʔ)c ~ ʔáyoc ~ ʔáʔyoc] sharp (the root is Nooksack /ʔəy(ʔ)- ~ ʔiy(ʔ)-/ good, the suffix means edge), [skʷáyɛʔ] corrected to [skʷóyɛˇʔ ~ skʷóyæˆʔ] squirrel, [sqəmáʔ] corrected to [sqəmóʔ] milk; breast, [swáʔwəlos] young men, [sčəwʔácən] Tsawwassen, B.C., and [č'm̓háʔyucin](sic) jaw (cf. SJ [č'm̓šó·ycin] lips (both)). Compare UHk [sx̣óy·əs ~ sx̣áy·əs] head, [ʔiyá·θ ~ ʔeyá·θ] sharp ("good-edge"), [skʷáyɛ] squirrel (one name of several), [sqəmá·] milk; breast, [swáwələs] young men, [sčəwáθəl] Tsawwassen,

[c'm̓xʸá·yθəl] chin, jaw.

GS has [kʷə ʔánu ~ kʷə ʔénu] this one, [qəƛ'asʔÍsma ~ qəƛ'osʔÍsm̓æ] and then (third person subject), [tɛmaƛ'óƛ'əm ~ tɛmæƛ'óƛ'um] those, [θəmaƛ'ó ~ θəmæƛ'ó] that (female), she (cf. LG [cɛ́mæƛ'o]), [x̣áƛ'θut ~ x̣áƛ'θot] get rough-flowing (cf. LG [x̣áƛ'] blowing hard (of wind)), [spá·lʔ ~ spálulʔ] Raven, [yáqʷəɬtax̣] Yáqʷəɬtax̣ (a Kwakw'ala group from Johnstone Strait area in B.C. that raided far south for slaves, including the Stalo and the Nooksack; they called themselves /lígʷiɬtaʔx̣ʷ/, Anglicized to Lekwiltok). Compare UHk [qəƛ'asʔÍsu] and then (third person subj.), [x̣áƛ'θət] get turbulent (of wind, water), [x̣áƛ'] be turbulent (wind, water), [spá·l] Western crow (larger crow, Corvus brachyrhynchos), [spəlál] Northwestern crow (smaller, Corvus caurinus).

3. Conclusion. At the beginning of my research into Nooksack it was not clear how closely related Nooksack was to Halkomelem, nor even (as several researchers noted) whether Nooksack might be a divergent dialect of Halkomelem. It was also not clear how much could be systematized and analyzed of the field notes and tapes of other researchers. It is gratifying to see that thanks to the quality and quantity of field work of other researchers in gathering data on Nooksack it is possible to isolate and analyze the phonology of Nooksack. It forms a coherent system, distinct in many ways from Halkomelem and its other neighbors. There is no doubt now that Nooksack is a distinct language from Halkomelem. The Upriver, Downriver and Island dialect groups of

Halkomelem (often called Chilliwack, Musqueam and Cowichan after their principal dialects) all share a number of phonological structures and rules which Nooksack lacks or organizes in different ways. The authentic features of the Nooksack phonemic system can be established through comparison of the idiolects of different speakers and contrast with Halkomelem and neighboring languages and patterns of sound correspondences.

It has also been possible to isolate a number of borrowings or influence features from Upriver Halkomelem. These include /ɵ/, /ɵ'/, /c ~ č/, /c' ~ č'/, /x^y/, loss of /ʔ/ adjacent to consonants and in final position, high-falling primary stress [ˆ], extra vowel and consonant length, language interference by the cross-cutting allophones of UHk /ə/, [I] and [U], influence or occasional borrowing of UHk [é] and [a]. The original uninfluenced Nooksack forms are often in variation with their Halkomelemized versions (within the speech of a given speaker or between speakers), so it is usually possible to decide upon the authentic Nooksack form. It is of course essential to have the Upriver Halkomelem forms for comparison.

One final confirming feature of these Halkomelem influence features is that several of them often occur together in stretches of speech or portions of interview. This was hinted at earlier with multiple examples of [a] within adjacent words or sentences. But the data distinctly shows that more than one of these consonantal-, vocalic- and

intonational-variables can proliferate in given stretches of Halkomelemized speech. However when Nooksack words are Halkomelemized, they almost always retain some Nooksack phonological features and always retain most of their Nooksack inflectional features. As my work on Nooksack grammatical systems and syntax proceeds it should be possible to say more about this.

Comparison of Nooksack and Halkomelem phonologies and sound correspondences can now be brought to bear on one more case of variation, a significant one. The name of the Nooksack language in Nooksack is [ɬéč^{h}eləsəm ~ ɬéč^{h}æləsəm] (LG and others). Upriver Halkomelem speakers call it [ɬéč^{h}Iləsəm] /ɬécələsəm/. Which alternate in Nooksack is correct? Or do we always have to cite both? Galloway and Richardson 1983 show that the name derives from the name of a village, [ɬəčélos] /ɬəčélos/, within what is now Lynden, Washington. This favors the alternate [ɬéč^{h}æləsəm]. Confirmation is provided by the sound correspondences of unstressed Proto-Central Salish */a/ and */u/ (Galloway 1982). Unstressed *a > Nooksack æ , UHk ə, and unstressed *u > Nooksack u, UHk ə (UHk unstressed /a/ and /u/ have other sources). Thus UHk would have /ɬécələsəm/ precisely corresponding to Nooksack /ɬéčæləsəm/, and Nooksack [ɬéč^{h}eləsəm] is really most likely the Halkomelem pronunciation.

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