ON THE PHONOLOGICAL DESCRIPTION OF THE HEILTSUK LANGUAGE

by

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The aim of this paper is to discuss the various problems connected with finding a system of phonemes in terms of which heard Heiltsuk speech can satisfactorily be represented in written form.

The division of the paper is as follows. After the presentation of general information (Chapter 1), and of a methodological digression about the standard of satisfactoriness to be applied (Chapter 2), a survey is offered of the various symbols used in narrow transcriptions of elicited Heiltsuk speech (Chapter 3). Follows an inventory of regularities and singularities observed with the occurrences of those symbols (Chapter 4) and, finally, the step-by-step reconstruction of the observations in phonological terms proper (Chapter 5).

1. Introductory

1.1 The empirical data to be discussed in this paper were collected in summer 1972, by Frits H. Kortlandt, and in summer 1973, by the present writer. In both cases the research was financially supported by the Netherlands Organization for the Advancement of Pure Research (Z.W.O.); in the latter case additional support was granted by the Band Council of Bella
Bella.

Under the title of "Tones in Wakashan", a report by Mr. Kortlandt on his findings is included in the Dutch Contributions to the 8th International Conference on Salish Languages. It is worth mentioning here already that the conjecture about Heiltsuk preserving ancient characteristics has gained further plausibility.

Though in the second period of field-work the bulk of was supplied by Mr. William S. Freeman, who had also been informant to Mr. Kortlandt, and by Mr. Angus Campbell, the contributions of Mr. Willie Gladstone and of Mr. Marshal and Mrs. Evelyn Windsor should not go unmentioned.

1.2 Heiltsuk is a northern member of the Wakashan family of languages. Whatever the origin of the name 'Heiltsuk', as the language is nowadays spoken both in Bella Bella and in Klemtu (British Columbia), it is a better name than 'Bella Bella (language)'.

Phonologically, but in any case morphologically Heiltsuk is closely related to the Kwakiutl language as described by Franz Boas. Unfortunately the relationship to the languages spoken in Rivers Inlet and in Kitimat is as yet virtually unknown. From Boas information on this point is hard to draw, as it is unclear how far he distinguished between Heiltsuk proper and the language of Rivers Inlet.

For instance, in the Introduction to his Kwakiutl grammar Boas writes: (205)

North of the Kwakiutl area, beginning at Rivers Inlet another dialect of the language is spoken which differs considerably from the Kwakiutl here discussed. The languages are not easily mutually intelligible, partly on account of differences in vocabulary, partly on account of differences in grammatical forms.

This is a peculiar passage. First the author says that north of the Kwakiutl area just another "dialect" is spoken of "the language". But what can be meant by "the language" here? Hardly Kwakiutl, for then Boas' words would imply that Kwakiutl is also spoken where it is not spoken. Let us therefore assume that the whole first sentence in the quoted passage is a slip of the pen which has been subsequently corrected by Boas' speaking of mutually unintelligible languages.

Still, we then look in vain for a definition of that language
that Boas must have assumed was spoken "north of the Kwakiutl area". Further, there is no suggestion on Boas' part that this supposed language is actually a group of languages comprising Heiltsuk and the languages of Rivers Inlet and Kitimat.

That Boas did not draw a sharp distinction between Heiltsuk and the language of Rivers Inlet can be concluded to from the second Appendix to his Kwakiutl grammar. This Appendix (296-299) purports to be about "the Bella Bella dialect", as Boas calls it, and has actually been a major source of inspiration for the elaboration of the Heiltsuk deictic system. But roughly adequate though the first deictic paradigms in the Appendix are (apart from all phonological questions, that is), on page 299 a paradigm is presented which is less adequate and in fact conflicts with a corresponding earlier one. (297) The subsequent talk of "the closely related dialect of Rivers Inlet" and the wider context of the paradigm suggest that either two appendices have been lumped together, or Boas neglected the difference between Heiltsuk and the language of Rivers Inlet.

Evidence in favour of the latter conclusion is provided by the series of stories Boas has edited under the title of Bella Bella Texts. In the Preface to this edition Boas says that

In the present village of the Bella Bella all the different tribes of that group have been assembled and there is a considerable variety of pronunciation among the divisions of the tribe. (........) It was remarkably difficult to obtain any kind of connected texts and for this reason it seemed advantageous to read to the natives the Rivers Inlet texts previously /in the Preface/ referred to, which were then repeated by the Bella Bella. Most of this work was done with one informant, Willy Gladstone. The differences between the two dialects are very slight. (/my italics/)

Now attempts to have the stories retold met with difficulty. This can of course be due to a culturally determined reluctance to 'telling stories one does not own', and also to bad pronunciation on my part. For not in one supposed Heiltsuk text does Boas indicate the pitch-pattern of the words, and pitch is phonemic in Heiltsuk. But more likely is that Mr. Gladstone, who actually speaks both Heiltsuk and the language of Rivers Inlet, repeated Boas' dictations in the latter language.

Unfortunately Mr. Gladstone does not remember the details of his cooperation with Boas. But the fragments of other
stories than his own which I tried to read to him, were identified by him as in the language of Rivers Inlet. Moreover, the vocabulary to the Texts contains many words Boas explicitly marks as Heiltsuk, but that Mr. Freeman identified as in the Rivers Inlet language.

In sum, Boas is less reliable as a guide in the matter of the relationships between Kwakiutl and its northern neighbour-languages. The best we can do at present is therefore to rank Kwakiutl, Heiltsuk, and the languages of Rivers Inlet and Kitimat on equal footing as as many 'North-Wakashan' languages. This in its turn implies that just as 'North-Wakashan' is to be preferred to the genealogically biased term 'Kwakiutlic', 'South-Wakashan' is to be used as a neutral generic term instead of 'Nootkan'.

2. Methodology

2.1 In a recent reprint of his article "Aspects of Prosodic Analysis", R.H. Robins argues for what he calls the 'nominalist' view of the nature of the phoneme as against the 'realist' and 'conceptualist' views.

As he points out (190), in the realist view it is assumed that "phonemes exist in some way in languages apart from the work of the analyst". Consequently, this analyst could be said to be finding a system of phonemes in a quite literal sense.

In the conceptualist view this idea of phonemes somehow existing in advance of phonemic analysis is given a more toned-down version by explaining 'somehow existing' as 'existing in the mind of the speaker of the language concerned'.

The nominalist view, finally, opposes both of the former in that it rejects the very talk of existence in connection with phonemes, and replaces it by talk of the practical usefulness of the word 'phoneme' for the systematic description of a corpus of linguistic data. What could be said to exist are sheets of paper with narrow transcriptions on one side and their respective meanings (expressed in some meta-language) on the other. As Robins himself puts it, in the nominalist view

Phonemes, like all other technical terms in linguistics, take their place as part of the linguist's 'language about language', and no more than that.
Acceptance of the first two points of view implies acceptance of the idea "that there is only one accurate phonemic analysis of any one set of data" (190).

Acceptance of the nominalist view, on the other hand, commits to the idea that (191)

No one analysis, or mode of analysis, is the only one accurate or sacrosanct, but any account of the language, in any terms, is an adequate statement and analysis, provided that, and to the extent to which, it comprehensively and economically explains what is heard (and read) in the language, and 'renews connection' with further experience of it. Questions of truth and falsity of 'what is there' and 'what is not there', only arise on the view here set out at the level of the barest phonetic observation and recording, before any analysis has taken place.

As Robins goes on to say, a particular consequence of the nominalist view is admission of the possibility of phonological analysis not in terms of phonemes at all. If 'phoneme' is but a useful word, so too could be 'syllable' and notably the key-words 'prosody' and 'phonematic unit' in the approach to phonological analysis initiated by Firth.

Also, phonemic and non-phonemic phonological analyses may be conceived of as complementary. To quote Robins once again, (191)

It is, however, legitimate to claim that from its origin the phoneme concept has been primarily tied to transcription, the representation of a language in terms of its phonic material by means of discrete and consecutive letters or symbols on paper (.....), and that in consequence of this, phoneme theories have necessarily concentrated on minimal contrast in identical environment, emphasizing the paradigmatic aspect of phonological relationships at the expense of the syntagmatic (...) aspect (...). Where a language is unwritten, or where the orthography is far from adequate as a key to pronunciation, a phonemic analysis may well be indispensable as the basis of a workable transcription unburdened with the excess of different symbols required in a narrow impressionistically 'accurate' phonetic transcription. But phonological analysis need not stop at or be based on phonemic transcription.

So much for Robins' paper, now for the standpoint adhered to in mine.

2.2 The extensiveness of the above quotations actually indicates approval. I consider myself a 'nominalist' in Robins' sense of that word, if only because to my mind the 'realist' view is difficult to understand, whereas the 'conceptualist' view uncomfortably reminds one of a dated sort of psychology.
For granting that regularities in speech sounds are connected with regularities in the brain processes involved in producing and perceiving speech, the idea that the connection is actually a one-to-one correspondence goes wholly unsubstantiated and is not even plausible. Such an idea is on a par with postulating that perceiving a visual shape, say a letter, amounts to the brain finding a 'template' to match the stimulus-complex emitted by that letter. 5)

For the rest, the main consequence of my nominalism for the analysis to follow shortly, is that I shall not hesitate to call on morphological evidence in cases where (my) phonological reasoning leaves room for alternative transcriptions. Should morphological evidence be inconclusive or even non-existent, the 'safest' transcription will be advanced, that is, the one with redundant symbols.

3. Survey of Symbols Used in Narrow Transcriptions

3.1 Use of the following adapted I.P.A.-symbolism appeared necessary in field-notations:

<table>
<thead>
<tr>
<th>Consonants</th>
<th>Plosives</th>
<th>Fricatives</th>
<th>Nasals</th>
<th>Glides</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plain</td>
<td>Aspiated</td>
<td>Glottized</td>
<td>Plain</td>
</tr>
<tr>
<td>bilabial</td>
<td>b</td>
<td>p</td>
<td>p'</td>
<td>m</td>
</tr>
<tr>
<td>dental-alveolar</td>
<td>d</td>
<td>t</td>
<td>t</td>
<td>n</td>
</tr>
<tr>
<td>alveolar</td>
<td></td>
<td></td>
<td></td>
<td>s</td>
</tr>
<tr>
<td>affricate-alveolar</td>
<td>z</td>
<td>c</td>
<td>ĉ</td>
<td>l̃</td>
</tr>
<tr>
<td>lateral</td>
<td></td>
<td></td>
<td></td>
<td>1̃</td>
</tr>
<tr>
<td>affricate-lateral</td>
<td>G</td>
<td>G̃</td>
<td>G̃</td>
<td></td>
</tr>
<tr>
<td>palatal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>palatal-velar</td>
<td>g̃</td>
<td>k̃</td>
<td>k̃</td>
<td>x̃</td>
</tr>
<tr>
<td>velar-labialized</td>
<td>g̃</td>
<td>k̃</td>
<td>k̃</td>
<td>x̃</td>
</tr>
<tr>
<td>uvular</td>
<td>g̃</td>
<td>q̃</td>
<td>q̃</td>
<td>x̃</td>
</tr>
<tr>
<td>uvular-labialized</td>
<td>g̃</td>
<td>q̃</td>
<td>q̃</td>
<td>x̃</td>
</tr>
<tr>
<td>laryngeal</td>
<td></td>
<td></td>
<td></td>
<td>?</td>
</tr>
</tbody>
</table>
Apart from the use of one more symbol: h , and his not mentioning something like the phenomenon I call 'conglottalization', Boas draws similar distinctions for Kwakiutl. In view however of some of his workings in the Kwakiutl grammar, it should be emphasized that in Heiltsuk all plosives are as a rule voiceless, granted the occurrence of voiced allophones of the plain and (very rarely) the glottalized ones. Fricatives too are voiceless, except /h/ that sounds as in German and Dutch. /h/ has been ranked as a fricative only because IPA does so.

With plosives, aspiration is heavy, whereas glottal release is weak. Much as Boas has pointed out for Kwakiutl (209), the difference between aspirated and non-aspirated plosives is one that is easier to notice than the difference between plain and glottalized plosives.

The pre-glottalization of nasals and glides is not easy to hear either. But the case is somewhat different with conglottalization, for here the presence of glottal stricture goes hand in hand with lengthening of resonance of the nasal.

Though /p, t, c, k/ have a sound-value that could be approximated by writing /b, d, z, h/, with /k, q, q/ the aspiration amounts to genuine friction. Thus, for instance, /k/ would have to be approximated by /k/.

Notably in Mr. Freeman's speech, /q/ sometimes approximated /q/, though the difference was never really blurred.

Aspiration of fricatives was interpreted as an immediately following /h/. Though never really clearly, this /h/ could sometimes actually be heard separately.

The set of vowels heard is this.
Because of its frequent occurrence, the symbol 'a' is used instead of 'u' for the convenience of typewriting.

Not mentioned in the chart are the diphongs [ai] and [au]. Their sound-value is not quite constant. Most conspicuously in Mr. Campbell's speech, [ai] may approximate [ai] on the one hand and a longish [e] on the other. Further, [au] may not be distinguishable from [ou], and may even reach [o*]. The only regularity observed in these sound-fluctuations was that [e*] occurs more frequently after [h]. But even in this position it appeared to be just an allophone of [ai]. For the sake of convenience these diphongs will therefore henceforward be written 'ey' and 'aw', as has also been done by Mr. Kortlandt in his mentioned report.

For the rest, all this wealth of vowels can without much ado be reduced to just [a, A, ã, i, u, ey, aw]. This will be shown in the next chapter. Still further reduction is a matter of phonological interpretation in the stricter sense, but is not difficult either.

3.2 Prosodic features noted were pitch, length, and accent (stress). Pitch is indicated as a concomitant feature of a vowel. The rare cases where this device could not be applied, are presented in 4.19.

Broadly speaking, pitch is either high or low, and in words that do not exclusively consist of consonants (as e.g. [qqs] 'eye'), at least one high or low tone is heard. But 'high' and 'low' should not be taken in an absolute sense. Rather the words 'high' and 'low' stand for rising and falling of tone, respectively, whereas the 'starting-point' of the rise or fall may be higher with one elicited word than with another, even from one and the same informant.

In themselves, high and low pitch are easy enough to render by means of the superscripts ' and ', respectively. But also is needed a notational device to render the peculiar pitch-pattern of items such as [dona] 'to pull', and [tanik] 'cold'. In these items only one 'peak of pitch' can be heard. To indicate this sort of pitch-pattern, I use the notation [dona], [tanik]. Thus, [dona] represents a start of the pitch at 'neutral' level, while the rise proper takes place with [a]. One could try to depict the pitch-pattern in question with [dona].
Other items with this pitch-pattern are for instance
\(-\text{g̃̇yā}_\text{Ⅱ}\) 'to go on all fours', \(-\text{g̃̇yā}_\text{Ⅱ}\) 'packing and
carrying on the arm', \(-\text{q̃̇yā}_\text{Ⅱ}\) 'to live', \(-\text{s̃̇yā}_\text{Ⅱ}\)
'hair', \(-\text{g̃̇wā}_\text{Ⅱ}\) 'raven'.

\(-\text{d̃̇yā}_\text{Ⅱ}\) 'to wipe' and \(-\text{ō̃̇wā}_\text{Ⅱ}\) 'to give' also have
but one, \(-\text{k̃̇wāb̃̇wā}_\text{Ⅱ}\) '(man's)shirt' but two peaks of
pitch. In all these cases, however, where the vowels
forming a 'pitch-unit' are separated by a plain glide,
the localization of the peak of the pitch is undeterminable.

Further, the mark " as an indication of neutral
pitch, has sometimes to be used twice in succession, as
in \(-\text{s̃̇x̃̇b̃̇ỹ̇l̃̇}_\text{Ⅱ}\) 'to sharpen a knife', \(-\text{m̃̇s̃̇w̃̇l̃̇ỹ̇s}_\text{Ⅱ}\)
'east'.

Also with an element of neutral pitch is the item
\(-\text{p̃̇p̃̇s̃̇l̃̇}_\text{Ⅱ}\) 'to blink repeatedly'.

Finally, neutral pitch is frequently heard before an
occurrence of conglottalization. For instance in the item
\(-\text{d̃̇ñ̇ỹ̇l̃̇t̃̇w̃̇l̃̇}_\text{Ⅱ}\) 'to pull the seine from the boat to the
float'. The sound-value of this item could be characterized
as lying in between \(-\text{d̃̇ñ̇ỹ̇l̃̇t̃̇w̃̇l̃̇}_\text{Ⅱ}\) and
\(-\text{d̃̇ñ̇ỹ̇l̃̇t̃̇w̃̇l̃̇}_\text{Ⅱ}\) (though more on the side of the latter).
That is, one hears one stretch of slightly prolonged
nasal resonance, shortly after the start of which
glottal stricture occurs but without actually interrupting
the resonance.

3.2.1 Greater length characterizes \(-\acute{\text{a}}, \grave{\text{e}}, \breve{\text{a}}, \ddot{\text{a}}, \grave{\text{i}}\); the
remaining vowels of the chart always sound shorter. How long
exactly the former vowels sound is subject to considerable
variation. In emphatic speech, the high-pitched ones are half-long
to long; the low-pitched ones are as rule slightly shorter. This
apparently automatic shortening becomes more extreme after
glottalized consonants, with some speakers at least. Thus, Mr.
Freeman pronounces \(-\text{w̃̇d̃̇o}_\text{Ⅱ}\) 'dog', but Mr. Campbell \(-\text{w̃̇d̃̇o}_\text{Ⅱ}\).
In rapid speech one may even hear \(-\text{w̃̇d̃̇o}_\text{Ⅱ}\), with a first vowel
that is hardly distinguishable from \(-\acute{\text{a}}\). A related phenomenon
was observed by Boas in Kwakiutl. (207)

Worth mentioning is also that with some speakers rounding and
spreading of the lips in producing [u] and [i], respectively, is less pronounced than for instance with Mr. Freeman. Actually these vowels then tend towards [w/o] and [I/e], and may even resemble allophones of the diphthongs [aw] and [ey].

3.2.2 Accent can be heard in words with a pitch-contour as exemplified by the following items: (1) [hāwmā] 'to ask a question', (2) [tīnīqā] 'to sweat', (3) [āqeywālā] 'cap'. The place of the accent, however, appears to be a matter of dialect.

The first item is pronounced identically by all informants, viz. [hāwmā]. This, incidentally, is another reason why even [dīyā] could not be written [dīyā]. The latter spelling suggests a sort of prominence of one part of the word which [dīyā] actually lacks.

Now in pronouncing the other two items Mr. Freeman maintains the accent with the first high-pitched vowel, and one hears him say [tīnīqā], [āqeywālā]. But from Mr. Campbell one hears [tīnīqā], [āqeywālā]. In his case the rise of the pitch is less high with the unaccented vowel(s) than with the accented one, which could even cause an impression of neutral or low initial pitch.

3.3 At any rate, both length and accent are linked with pitch and predictable. In the transcriptions hereafter they are not indicated, unless for special purposes.

Pitch, for that matter, is no doubt phonemic, witness the occurrence of the following pairs.

[kəs] 'mussels'           [kəs] 'sitting together on the beach'
[kəs] 'sitting outside'(sg.)  [kəs] 'sitting together on the ground (outside)'

[hawl̪] 'small thing' (sg.)
[hawl̪] 'small things'

[yakl̪] 'to spoil something'
[yakl̪] 'to spoil the reputation of another person'

Also important are the pairs:
[waw̪] 'of the same size or age'  [la strands] 'to be killed'
[waw̪] 'allies'  [la strands] 'you kill'
However, as will be shown in the chapters to follow, the ways in which pitch distinguishes words are less easy to state than the fact that it does.

4. Analysis of the Data

Still in IPA-terms, the following states the correlations holding between the occurrences of the symbols in the corpus.

4.1 Glottalized consonants of whatever kind, [ʔ], and plain plosives do not occur word-finally.

4.2 Plain and glottalized plosives are bound to the following positions:
(a) word-initially;
(b) after a fricative;
(c) after an aspirated plosive (in this position they do not occur too frequently. Examples: [ʔpko₃] 'wild man, Sasquatch'
[ʔámczu] 'table');
(d) after a vowel or diphtong;
(e) after a nasal (that is then always preceded by a vowel or a diphtong. Examples: [ʔámd₃] 'Klemtu', [ʔámx₄] 'boxing').

4.3 (Pre-)glottalized nasals and glides occur
(a) word-initially;
(b) after a fricative;
(c) after a vowel or diphtong provided yet another vowel or diphtong follows, as in [ʔúbeⱥ₃] 'point of land';
(d) after a nasal (that is preceded by a vowel or diphtong), as in [ʔil₃] 'canoe', [ʔámn₄] 'to be tied up alongside another boat'.

As for position (a), Mr. Freeman frequently says [ʔnüw...], where Mr. Campbell has [ʔw...]. Thus, one hears [ʔw₄kint₄] vs. [ʔ₄kint₄] (people of Rivers Inlet). Inversely, it is from Mr. C. that [ʔy₄l₄] (waving the hands) was heard, whereas Mr. F. pronounced [ʔy₄l₄].
About position (c) it is to be noted that the preceding vowel must be long, as in ['hōhá] 'jackpine'; 'ooligan-grease', ['lúttlída] 'to report (to a group)', ['háyá] 'to hide oneself'. In the exceptions to this rule, the short vowel has low pitch, while its presence is due to one or another sort of variation. For instance, one hears ['nánësúyá] 'sling' (Mr. C.) and ['nánësúyá] (Mr. F.); ['lúttlákswá] 'to put putty into the seams' (Mr. F.) and ['lúttlákswá] (Mr. C.).

4.3.1 Conglottalized nasals are as a rule preceded by a short vowel, the pitch of which is but the onset of a pitch-pattern such as one hears in ['dënd] and ['síyá], or in ['sxhádialá]. However, in emphatic speech this vowel may obtain special relief and sound low-pitched. Thus, one now hears ['zúsáfiyá] 'spade', now ['zúsáfiyá]; now ['kónlís] 'to lie down on the beach', now ['kónlís].

An item with one high and one low pitch-peak is ['bábal2a] 'jealous (sexually)'. In emphatic speech it may reach the value ['bábal2a].

Rare are the cases of conglottalization preceded by a high-pitched short vowel, viz. ['fëmddxtab] 'plugged feeling in the nose when you have caught a cold', ['zízprénnxsm] 'Japanese woman', ['hántsadwiav] 'two boats tied up to each other'.

4.4 ['a] is always followed by some vowel. The sequence of ['a] plus a vowel, seen as a whole, occurs (a) word-initially, (b) after a fricative (with peculiarities to be discussed later), and (c) after a vowel or diphong. Examples: ['áxkó] 'pity', ['siialt] 'to blame someone', ['páxtant] 'to lay a board flat on a log', ['háaxoxáulf] 'hellebore', ['heýeyiózalá] 'to speak Heiltsuk' (pl.)

After ['a], the vowel written ['a] usually approximates ['a].

4.5 After ['s] one may or may not hear a short vowel before the sequence of plain nasal or glide plus long vowel. Thus, one may hear both ['sáxá] and ['slá] 'to drill'. Consider also the alternation of the sequences ['síy] and ['sy], as illustrated by ['kíxsiyá] 'a saw' and ['íxsyálw] 'to pull a boat up the rocky shore'. 
4.6 As also pointed out by Mr. Kortlandt in his mentioned report, consonants may form clusters. The final member of a cluster may be any consonant, and the first may be a plain nasal (cf. [-múmOâtwa] 'ear ornament'), but for the rest no other components are allowed but aspirated plosives, or fricatives.

Further, clustering of consonants is possible throughout the word, as illustrated by [-coxtwá] 'to wipe tears from the eyes', [-míaâlawt] 'to move s.th. over on the table', [-máxOâyâxO] 'that (invisible) cat there-with-you'.

Not found were the clusters [-..ss..], [-..cs..], [-..is..], [-..t..]...

4.7 After [-u] and [-aw], no palatal velars or unlabialized uvulars can immediately follow, only labialized ones can.

[-akukOáxO] 'red spring salmon', which alternates with [-akukOáxt], presents a case of 'progressive' labialization of the [-x] in connection with vowel-reduction. For the second occurrence of [-x] in these items must be taken to correspond with the vowel in the suffix {2 aď-}. (About vowel-reduction, see also 3.2.1)

4.8 Different than in Kwakiutl (Boas, p. 214), in Heiltsuk labialized velars and uvulars may precede [-u]. In addition to the already mentioned item [-gOukO], the following are important examples:

[-kOukOâ] 'warm, hot' (cf. [-kOuâbâwâ] '(man's) shirt')
[-Oúmtâ] 'to see-saw' (cf. [-kOúmsülâm] 'completely dry creek')
[-qOúnâ] 'thumb' (cf. [-gOúnâ] 'to pay', [-qOúmâ] 'avalanche')

On the other hand, a detail to be noted is that in the sequences [-gOd], [-kOd], and so on, there is but one prolonged labialization.

Word-initially, palatal velars followed by [-u] are rare. [-kukOâxta] 'to shave' and [-kâs] 'not to be the case', with their derivatives, are the only cases in point which can be cited from the corpus.
4.9 Let 'C₁' represent any consonant out of the following set (1), 'C₂' any consonant out of the set (2), and so on. Let 'C' represent any consonant out of any set, and let 'N' represent any nasal.

<table>
<thead>
<tr>
<th>set (1)</th>
<th>set (2)</th>
<th>set (3)</th>
<th>set (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>b, p, m, m</td>
<td>g, k, k, x, y, y</td>
<td>w, w</td>
<td>q, q, x, h ?</td>
</tr>
</tbody>
</table>

The specifics of the occurrences of short vowels can then be stated as follows.

4.9.1 [ə] occurs in the position 

\[
C_1 - N - C
\]

Examples:

[ˈkb̥am̥] 'button', [ˈm̥əncə] 'to measure', [ˈb̥al̥əd̥] 'man from Bella Coola', [ˈf̥anqə] 'grunting (the act of ...)'.

When not a reduced [ə], or [ə], [ə] occurs in the same position as [ə], but also in between those members of set (1) that cannot form a cluster. One finds [ˈp̥al̥] 'thin and flat', [ˈm̥ḁl̥g̥f̥iw̥ḁ] 'piling', [ˈm̥e̥t̥ḁ] 'quivering', [ˈk̥ḁn̥ḁ] 'branch', [ˈp̥e̥p̥ḁ] 'to blink (repeatedly)'.

4.9.2 [ɨ] occurs in the position 

\[
C_2 - N - C
\]

Examples:

[ˈy̥i̥l̥ḁ] 'to rub, to smear', [ˈl̥i̥su̥] 'pole'. As well as in the positions of [ɨ], [ɨ] occurs in between non-clustering members of sets (1) and (2). Examples: [ˈk̥i̥l̥x̥] 'metal, iron', [ˈm̥i̥l̥x̥] 'to punch', [ˈp̥i̥x̥] 'to make grooves (in wood)', [ˈk̥i̥s̥q̥ḁ] 'lazy'.

Though rarely, [ɨ] may reach the value of [ə]. But as a rule, before and after consonants of set (2) the sound [ə] is excluded.

4.9.3 [ʊ] is not completely comparable with [ə], [ɨ], since it only occurs in the position 

\[
C_3 - n - C
\]

as in [ˈw̥ḁn̥k̥ḁ] 'to sneak into a boat', [ˈk̥ḁl̥k̥e̥l̥ḁ] 'to sleep on a beat'. Its sound-value may easily approximate [ʊ], except when [C₃] is a labialized uvular, in which case a rather [ɨ]-resembling sound is heard. When the nasal is [ˈm̥], one usually hears the cardinal vowel [ʊ], e.g. [ˈq̥o̥m̥x̥s̥i̥wḁ]
'white man'.

[\[-a\] with a value ranging from \([-\varepsilon]\) to \([-\circ\] to \([-\varepsilon]\), paralleled \([-\varepsilon\] as for instance in \([-k\ddot{a}l\ddot{s}\] 'lying down on the ground (outside)'. When the nasal is \([-m\] one hears \([-\ddot{u}\] again: \([-x^0\ddot{u}k\ddot{a}m\] 'Indian rice'.

In view of the preceding sections one might expect \([-\ddot{u}\] to occur between the non-clustering members of sets (1) and (3). In point of practice, however, in these positions it is not possible to determine whether what one hears is \([-\ddot{u}\] or \([-\ddot{a}\].

Irrespective of pitch, cases of \(*\ \text{?}_w \text{\textsuperscript{n C}}\) can be said not to occur in the corpus (but see 4.13).

As pointed out in 4.7 already, \([-\ddot{a}\] may also be an allophone of \([-\ddot{a}\]. With a value very close to \([-\varepsilon\] it can be heard in \([-l\ddot{e}y\ddot{n}k\] 'to go home' (Mr. F.), which alternated with \([-l\ddot{e}y\ddot{n}k\] (Mr. C.).

In a few cases, \([-\?\] is followed by \([-\ddot{z}\] (or \([-\ddot{z}\]), viz. in \([-l\ddot{y}m\] 'father' and \([-l\ddot{u}m\] '(and) then'. The former item alternates with \([-l\ddot{a}w\ddot{m}\] (both in Mr. Freeman's and Mr. Campbell's pronunciation), the latter item was pronounced \([-l\ddot{a}w\ddot{a}\] by Mr. Gladstone. Also, there is \([-l\ddot{a}w\ddot{k}\ddot{a}\] 'slow, to work slowly' on the one hand, and \([-l\ddot{a}w\ddot{k}\ddot{a}\] 'to take one's time' on the other.

\[
\begin{align*}
\text{4.9.4} & \quad [-\ddot{a}] \quad \text{occurs in the positions} \\
& \quad \begin{cases} C_1 \ & \text{C} \\
C_3 - n \ & \text{C} \\
C_4 \ & \text{C} \\
\end{cases}
\end{align*}
\]

Examples: \([-n\ddot{a}n\] 'grizzly bear', \([-g\ddot{l}l\ddot{d}\ddot{a}n\] 'horse', \([-l\ddot{a}k\ddot{a}\ddot{x}\ddot{o}b\ddot{a}l\ddot{s}\] 'standing on the point of a ridge', \([-q\ddot{a}n\ddot{a}\] 'to adze', \([-\ddot{n}u\ddot{g}\ddot{n}o\] 'we (incl.)', \([-h\ddot{n}\ddot{a}m\] 'bow', \([-l\ddot{a}n\ddot{x}\ddot{o}\] 'bruised'.

When the nasal \([-m\] occupies the position just indicated for \([-l,n\], it is preceded by \([-\ddot{a}\] rather than \([-a\].

Examples: \([-h\ddot{a}m\ddot{s}\] 'to eat', \([-l\ddot{a}m\ddot{s}\] 'to play', \([-l\ddot{a}s\ddot{a}m\ddot{t}\] 'to badminton together'. It should not go unmentioned that otherwise than after \(C_4\), \([-\ddot{a}\] \(\text{\textsuperscript{1}}\) and particularly \([-\ddot{a}\] are sometimes practically indistinguishable from the corresponding forms with \([-\ddot{a}\].
Boas made a similar point for Kwakiutl (214).

\[ \text{[\text{a}]} \] (or \[ \text{[\text{x}]} \], when the nasal is \[ \text{[\text{n}]} \]) occurs in the position \( C_4 - N \# \), as in \[ \text{[\text{d}][\text{a}][\text{l}][\text{pt}][\text{a}][\text{l}]} \] 'pole or pile that has been driven very deeply', \[ \text{[\text{h}][\text{am}][\text{g}][\text{f}][\text{i}][\text{d}]} \] 'cooking'. One of the rare cases of \( C_1 - N \# \) is \[ \text{[\text{l}][\text{a}][\text{n}][\text{l}][\text{a}][\text{n}][\text{c}]} \] 'submarine'. Though \[ \text{[\text{a}]} \] does occur between non-clustering members of sets (1) and (4), it cannot be distinguished from \[ \text{[\text{e}]} \] in that position if one of the surrounding consonants is glottalized (cf. 3.2.1). Thus, one hears \[ \text{[\text{n}][\text{a}][\text{x}][\text{e}][\text{d}]} \] 'bucking the wind/the tide' (here the value of \[ \text{[\text{a}]} \] is almost \[ \text{[\text{e}]} \], and clearly distinguishable from the -short- \[ \text{[\text{a}]} \] in \[ \text{[\text{z}][\text{a}][\text{k}][\text{a}][\text{t}][\text{w}][\text{a}][\text{t}]} \] 'to dye clothes'). But with \[ \text{[\text{l}][\text{a}][\text{q}][\text{f}][\text{t}][\text{a}]} \] 'to spread berries on a surface (to dry them)', \[ \text{[\text{h}][\text{a}][\text{k}][\text{q}][\text{t}][\text{o}]} \] 'sun-dried berries', \[ \text{[\text{q}][\text{a}][\text{k}][\text{a}][\text{f}][\text{l}][\text{a}]} \] 'to chew (chewing gum)', and so on, the sound-value of the \[ \text{[\text{a}]} \] may also reach \[ \text{[\text{e}]} \].

4.9.5 \[ \text{[\text{e}]} \] occurs exclusively in the position \( C_2 - N \# \). Instances of \[ \text{[\text{e}]} \] could not be found. Though \[ \text{[\text{t}[\text{a}][\text{y}][\text{a}][\text{s}][\text{u}]} \] 'you get out of sight' is matched by \[ \text{[\text{t}[\text{e}][\text{y}][\text{a}][\text{m}][\text{s}][\text{u}]} \] 'Yes, you get out of sight', \[ \text{[\text{h}[\text{a}][\text{y}][\text{a}][\text{s}][\text{u}]} \] 'you hide yourself' is matched by \( \text{[\text{h}[\text{a}][\text{y}][\text{a}][\text{m}][\text{s}][\text{u}]} \). Apparently \[ \text{[\text{e}]} \] and \[ \text{[\text{t}} \] correspond to \[ \text{[\text{a}]} \] and \[ \text{[\text{e}]} \] in the same position but preceded by a \( C_1 \) or \( C_3 \). Thus, \[ \text{[\text{g}[\text{i}][\text{s}][\text{l}][\text{t}][\text{u}][\text{t}]} \] 'to make the first set' is an example comparable to \[ \text{[\text{t}[\text{a}][\text{m}][\text{k}][\text{o}][\text{g}][\text{o}]} \] 'cured salmon eggs', whereas \[ \text{[\text{g}[\text{l}][\text{i}][\text{t}]} \] 'long' is comparable to \[ \text{[\text{t}[\text{m}][\text{q}][\text{o}][\text{u}][\text{u}]} \] 'to plunge'.

4.10 \[ \text{[\text{a}]} \] is always preceded by a consonant of set (2), as in \[ \text{[\text{k}][\text{a}][\text{n}]} \] 'crow'. When low-pitched, its sound-value may reach \[ \text{[\text{i}]} \]. One hears \[ \text{[\text{e}][\text{y}][\text{k}][\text{a}][\text{s}][\text{a}][\text{s}][\text{u}]} \] 'ten' (Mr. C.) and \[ \text{[\text{e}][\text{y}][\text{k}][\text{e}][\text{r}][\text{s}][\text{u}]} \] (Mr. F.). That \[ \text{[\text{a}]} \] can be equated with \[ \text{[\text{a}]} \], can be seen from the alternation \[ \text{[\text{g}[\text{a}][\text{l}][\text{a}][\text{l}]} \] 'before' (Mr. C.), \[ \text{[\text{g}[\text{a}][\text{l}][\text{a}][\text{l}]} \] (Mr. F.).

In the position \( C_2 \), one may hear a slightly diphthongal \[ \text{[\text{a}]} \] instead of \[ \text{[\text{a}]} \]. In transcriptions this is taken for granted.

4.11 The low-pitched \[ \text{[\text{e}]} \] \( \text{a} \text{w} \) can only occur after a consonant of set (4), as in \[ \text{[\text{e}][\text{y}][\text{a}][\text{y}][\text{s}[\text{q}][\text{p}][\text{m}][\text{a}][\text{f}]} \] 'freckles' \[ \text{[\text{q}[\text{a}][\text{w}][\text{s}][\text{k}][\text{w}]} \] ('this here is yours'). With high pitch, the diphongs may occur after any consonant.

Although \[ \text{[\text{e}]} \] \( \text{u} \), with either pitch, may occur after \[ \text{[\text{h}]} \], these vowels never occur after the remaining members of set (4), i.e. the uvulars.

Before uvulars, \[ \text{[\text{O}]} \] or \[ \text{[\text{O}]} \] is heard rather than \[ \text{[\text{e}]} \].
In transcriptions this is not given special attention either.

4.12 [\textipa{ˈia}] is always an allophone of [\textipa{ɨi}] Its occurrence can be illustrated as follows.

\begin{align*}
\text{\textipa{ˈoːkʰiːa}} & = \text{\textipa{ˈoːkʰiːa}} \quad \text{sea urchin} \\
\text{\textipa{ˈwɪɡiːb̥a}} & = \text{\textipa{ˈwɪɡiːb̥a}} \quad \text{eagle's nose} \\
\text{\textipa{x̥ operate a}} & = \text{\textipa{x̥ operate a}} \quad \text{to give a whistle}
\end{align*}

4.13 With sequences of the type CVNC, such as they were presented in 4.9 ff., a short vowel of undeterminable pitch may be heard after the nasal if the following consonant is one of [\textipa{k}, \textipa{ʁ}, \textipa{q}, \textipa{ʁ}], and most noticeably so if it is one of [\textipa{x}, \textipa{ʁ}, \textipa{ʁ}].

Before [\textipa{x̥}] this vowel may reach a value as far near [\textipa{u}] as some variants of [\textipa{a}]. Thus, shortness is the only characteristic distinguishing the second vowel in [\textipa{nɒnɪx^0s̪m}] 'date (the fruit)' from the second vowel in [\textipa{nɒnɪx^0s̪m}] 'to be concerned about a person'.

Before [\textipa{x̥}] one hears [\textipa{e}, \textipa{a}], before [\textipa{x̥}] and [\textipa{x̥}], before [\textipa{x̥}] and [\textipa{x̥}]. Examples: [\textipa{kʰiːx̥}, 'metal, iron', [\textipa{ʃɑmɪʃ̥m̥}, 'left-handed person', [\textipa{ʁ 3lɔx̥s̪iːs]}, 'wrenched ankle'.

For the sake of economy, these vowels too have been kept out of transcriptions.

4.14 After the vowel [\textipa{a}], free variation was noted between [\textipa{wa} ...] and [\textipa{ywa} ...]; after both [\textipa{a}] and [\textipa{u}], between [\textipa{yɪ} ...] and [\textipa{yɪ} ...]. Thus,

<table>
<thead>
<tr>
<th>Standard item (by morphological criteria)</th>
<th>Variant</th>
</tr>
</thead>
<tbody>
<tr>
<td>[\textipa{ɪd̥w̥n̥m̥}] 'husband'</td>
<td>[\textipa{ɪd̥w̥n̥m̥}]</td>
</tr>
<tr>
<td>[\textipa{ʔɪnɪx̥}] 'someone good at long-lining (for halibut)</td>
<td>[\textipa{ʔɪnɪx̥}]</td>
</tr>
<tr>
<td>[\textipa{pʊ̥ɪl̥ăk̥}] 'home-made bread'</td>
<td>[\textipa{pʊ̥ɪl̥ăk̥}]</td>
</tr>
</tbody>
</table>

[\textipa{y}] in the last two items is slightly more open than [\textipa{ɪ}], and shorter as well. But it does not reach [\textipa{ɬ}]. As for pitch, the sequences [\textipa{w̥n̥m̥}] and [\textipa{ɪnɪx̥}] etc. are like [\textipa{d̥ʊ̥n̥}] (cf. 3.2).

When followed by the sequence NC, [\textipa{y}] is always in
free variation with \[?\]. Thus, besides \[hâ\dûmsù\] 'Yes, you hide yourself', one has \[hâ\dûmsù\ ]; besides \[lâ\dûncu\] 'Do we (inc.) ....?' one has \[lâ\dûncu\]. In the available corpus this sequence does not occur word-initially. The sequence \[w\ u\ C\] does, but only within the word is it liable to a similar sort of variation. For instance, one hears \[\lambda\wû\dûlx\dûl\ ] 'to do for a second time' as well as \[\lambda\wû\dûlx\dûl\ ] (or even \[\lambda\wû\dûlx\dûl\ ] -cf. 4.3.1).

4.15 Furthermore, after \[\x^0\ ] and \[\x^0\ ] glottal stricture may interrupt rather than follow the resonance due to lip-rounding, and hence sound somewhat like \[\w\ ] For instance, 'white' (said of an animal) is something in between \[mû\dûx^0\dûn\ ] and \[mû\dûx^0\dûn\ ]. Similarly, though one hears \[tûlx\dûl\ ] 'to open up', the morphologically related item 'to strike (as with a bat)' is something in between \[tûlx\dûl\ ] and \[tûlx^0\dûl\ ].

With \[xâ\p\dûx^0\dû\ ] 'little child' one however hears an 'isolated' \[?\].

4.16 Not only in the items mentioned in 4.14, but also in cases such as \[kî\f\dûl\dû\ ] 'to play the violin' and \[lî\f\dûx^0\dû\ ] 'murdered person' one encounters the pitch-pattern of \[dûn\ ]. Items such as \[s\x\dû\dû\ ] 'to sharpen a knife' and \[mû\dûx^0\dû\ ] 'east' have been referred to in 3.2 already.

4.17 Between \[?\] and plosives or fricatives, only long vowels can occur.

Excluded are the sequences \[u^s\u\ ] , \[i^s\u\ ] , \[a^i\u\ ] , otherwise than as instances of free variation mentioned in 4.14.

After \[?\] , \[h\ ] may undergo the shortening that is otherwise characteristic of glottalized plosives. Hence, in \[fâ\dû\wû\dûx^0\sûl\ ] 'hellebore' and \[fû\dû\e\dûf\dûx\ ] 'eyebrows' the first vowel may approximate \[\dû\dû\dû\ ] But as a rule, \[?\ ] cannot be preceded by short vowels.

4.18 After \[\x\ ] , \[?\ ] and \[?\u\ ] do not occur, only \[?e\y\ ] and \[?\w\a\ ] (with either pitch).

4.19 \[h\ ] occurs in the following positions: (a) word-initially, as in \[hî\mâ\dû\ ] 'chief', \[hî\dû\dû\ ] 'to vomit', \[hî\dû\dû\ ] 'fast, speed'; (b) after a long vowel, as in \[hû\hû\ ] '(unidentified small black sea-bird)', \[hî\f\f\ ] 'they-down-there'; (c) after a fricative, as in the reduplicated form \[hû\dû\wû\dûx^0\a\ ] 'to
whistle (at intervals, as a boat does'). Voiced as it is, [əh] in the last mentioned position is not easy to hear, any more than for instance in [əgasha:k'as] 'this side of a field', [əhayask'ashillə] 'about to get married', [əqalxhawləm] 'scissors'.

After [əx], [əh] and [əhu] do not occur, so the only respect in which [əh] does not parallel [el], is that it does not occur before [əu]. (əh) does occur before [ə, ə]; cf. 4.9.4).

To be sure, [ə makša] 'grouse' and [ə máxma] 'to punch on the face' could possibly be written as [ə makša] and [ə máxma], though writing the pitch-mark over the symbol 'm' is in itself sufficient to indicate that there is only nasal voicing. But transcribing * [ə hámakša] and * [ə hámxma] would be unsatisfying, because the symbol 'a' does not correspond to any sound-feature that can actually be heard. Again, the parallelism between [əh] and [el] is not complete.

4.19.1 The item [əhiylə] 'they-down-there' is particularly interesting. It could be elicited from Mr. Campbell only, and was recognized by the younger generation in Bella Bella (i.e. those about thirty years old) as "the old language". The second occurrence of [əh] in the item is more strongly palatalized than the first, and resembles a pre-aspirated [əhy]. The [el] too is palatalized, but still to be distinguished from [əy] in the synonymous item [əhiyl], that was elicited from Mr. Freeman. However, a variant of [əhiyl] appeared to be [əhiyl], again with a palatalized [el].

Now the sequences [əy] and [əy], with definite pitch, are unknown in the corpus; [əhiyl] is therefore a unique case. Moreover, items beginning with [əy] do not reduplicate as * [əy...y], but as [əy...y]. For instance, the plural of [əyəla] 'to wave (with the hands)' is [əyəla]. So [əy] in [əhiyl], and the sequence [əy] in [əhiyl], could be just variants of a palatalized [el]. This variation is not likely to be unique, for that matter. [ə laxof] 'to go away' is morphologically related to [ələmyaxcidxo] 'Yes, we are going to go away' and [ələlyaxci] 'to move away ahead of the others'. Another related item with [el] is [əaxcif] 'come here!'.
4.19.2 The following suggests that, in some positions at least, [y] in one dialect corresponds to [h] in another. With Mr. Campbell, an item as 'river, creek down-there' sounds [cf xláx̂ay], but with Mr. Freeman [cf xláx̂ay] or [cf xláx̂ay]. That is to say, both [dá] and [dhá] represent uninterrupted voicing anyway, but after the 'peak' of the high pitch a sudden 'flaw' will follow that was sometimes perceived as [h] plus [ã].

4.19.3 In a few cases word-initial [h] is immediately followed by [y], as in [hyita] 'accustomed to'. Much like [y] in [hiy], [hy] has a variant [hiy], witness [híyita]. Notice that besides [hyita] one has [yusá] 'to sip'.

4.20 In the position N, [a] does not occur, whereas glides cannot be followed by a consonant or the word-boundary at all. But [i] and [u] do occur in the mentioned position, for instance in [äd] 'nephew, niece, cousin' and [áxims] 'standing alongside' (both of these items from Mr. Freeman). However, the former item is pronounced [áwá] by Mr. Campbell, while Mr. Freeman, as well as offering an alternative item [áxims], now pronounced [hsabuls], now [hsábuls] 'under the bottom of s.th. outside the house'. Besides [i,u], diphthongs may precede N.

4.21 The only word-final vowels are [a,i,u].

So much for the present state of analysis of the corpus, apart from the details that will be discussed in due course in the next chapter. But now for the question of how to synthesize the results of the analysis into a more parsimonious set of aids to memory for the pronunciation than that of IPA.
5. Consonants, Resonants, and Syllabifiers

5.1 In what follows, the brackets ( ) are used to mark the status of a symbol as halfway between narrow and broad transcription. These brackets are also put around complexes of symbols containing at least one symbol with that status.

C indicates any member of the following sub-set of the set (4) in 4.9, viz. \[ \{ x, q', q, \} \].

Further, the observations in 4.9 - 4.10 and in 4.12 are now resumed by reducing the number of vowels to the following seven, the diphongs being left out of consideration.

\[ \begin{array}{c}
\text{i} \\
\text{u} \\
\text{a} \\
\text{e} \\
\text{a} \\
\text{u} \\
\text{e}
\end{array} \]

That is, to characterize the structure of items such as \[ ^\cdot [\text{g}l]x^\cdot \text{hit} \], the formula \[ ^\cdot [\text{C}_2^\cdot \text{NC} \ldots ] \] will be used, not \[ [\text{C}_2^\cdot \text{NC} \ldots ] \]. The item \[ ^\cdot [\text{t}^\cdot \text{m}^\cdot \text{n}^\cdot \text{g}^\cdot \text{b}^\cdot \text{a}^\cdot ] \] will be considered an instance of \[ [\text{C}_2^\cdot \text{NC} \ldots ] \], and so on. Thus, when figuring around meta-linguistic formulae, square brackets have a slightly adapted meaning.

Finally, from now on pitch will always be indicated, over a symbol represents either high or low pitch, but not the type of pitch connected with the mark “

The phonological argument, then, runs as follows.

5.2 The occurrence of items such as \[ ^\cdot [\text{m}^\cdot \text{k}^\cdot \text{fl}^\cdot \text{s}^\cdot ] \] (see 4.19) suggests that the \[ [\text{e}^\cdot ] \] in \[ [\text{C}_1^\cdot \text{e}^\cdot \text{N}^\cdot \text{C}^\cdot ] \] (let C represent the word-boundary as well) is a feature imposed by \[ \text{C}_1 \] rather than an inherent part of the nasal itself. But then writing the symbol ‘e’ is redundant; one can also write the pitch-mark over the nasal itself.

The following survey, as well as showing possible paradigmatic oppositions in between \( \text{C} \) and \( \text{NC} \), extends this line of reasoning. For the time being, \[ [\text{7} \ldots ] \] and \[ [\text{h} \ldots ] \] are ignored.
<table>
<thead>
<tr>
<th>Type of item</th>
<th>Instances</th>
<th>Simplifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₁_NC</td>
<td>[“‘ dém /’index-finger’]</td>
<td>C₁_NC as in ( dém)</td>
</tr>
<tr>
<td>C₂_NC</td>
<td>[“‘ nAm /’grizzly bear’]</td>
<td></td>
</tr>
<tr>
<td>C₃_NC</td>
<td>[“‘ lín /’singing (a folk song’)]</td>
<td></td>
</tr>
<tr>
<td>C₄_NC</td>
<td>[“‘ adl /’neighbour, niece, cousin’]</td>
<td></td>
</tr>
<tr>
<td>C₂_NC</td>
<td>[“‘ eßlt /’long’]</td>
<td>C₂_NC as in (git)</td>
</tr>
<tr>
<td>C₂_NC</td>
<td>[“‘ selxlt /’to be first’]</td>
<td></td>
</tr>
<tr>
<td>C₂_NC</td>
<td>[“‘ ?yàmśqeqy /’(s.o.) devoted to visiting’]</td>
<td></td>
</tr>
<tr>
<td>C₃_NC</td>
<td>[“‘ q‘ūmstählen /’brown’]</td>
<td>C₃_NC as in (q‘ūmstählen)</td>
</tr>
<tr>
<td>C₃_NC</td>
<td>[“‘ twámnmugō /’Yes, I am wading’]</td>
<td></td>
</tr>
<tr>
<td>C₃_NC</td>
<td>[“‘ adxımśms /’standing alongside’]</td>
<td></td>
</tr>
<tr>
<td>C₂_NC</td>
<td>(The instances that do occur are of the type C₃,qmC , and hence to be considered variants of C₃_NC )</td>
<td></td>
</tr>
<tr>
<td>C₄_NC</td>
<td>[“‘ q‘ànca /’to mend a net’]</td>
<td>C₄_NC as in (q‘ànca)</td>
</tr>
<tr>
<td>C₄_NC</td>
<td>[“‘ lágšyijkō /’sheltered by a tent in the house’]</td>
<td></td>
</tr>
<tr>
<td>C₄_NC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This survey exhaustively represents the environments in which [“‘ dém /” and [“‘ nAm /” occur. So why not eliminate the symbol ‘واجب’ by writing ‘واجب’ instead. Moreover, this device may give constancy of transcriptional shape to many morphemes, as illustrated by the following items.
'I am wading'
'You are wading'
'We (incl.) are wading' = Γτάνο'
'We (excl.) are wading' = Γτάντκ'

To this should be added that the symbol-sequence (C_4 NC),
though at any rate conceivable, does not represent another
sound-complex than does (C_4 NC). The neutralization can be
illustrated with the etymology of Γτάlκ' 'braided'. That the
root is VqάA can be seen from Γτάlά' 'to braid'. Now, before
the passive nominalizing suffix =k', root-final Γα turns into Γά', so κ(Γάlκ') would be acceptable from a
morphological point of view. Phonologically it would be acceptable
too, in view of the position of the symbol 'ά'. However,
morphological analysis is not always as easy as with Γτάlκ',
and therefore even in this case I prefer the transcription (Γάlκ').

In my opinion it is no use pointing out that this obscures the
structure of the root. That structure is obscured already by the
change of 'ά' into 'ι', and a separate, non-phonological
transcription specifying the morpheme-structure is necessary
anyway. Thus, in a lexicon (Γάlκ') would have to be specified
further as {qάlκ', k'} , the symbol '=' indicating the 'softening'
effect on the root-final consonant. 7)

5.2.1 The occurrence of Γτάlά is suggests, but in itself of
course does not demonstrate that the interpretations(C_1 NC) for
Γτάlά NC', (C_2 NC) for Γτάlά NC', and so on, are warranted. The
decisive argument is that (1) Γτά is does occur, but that (2)
Γτά NC' is not instantiated in the corpus. That's why we can
safely interpret Γάl as (άl) or (άl) or, given that the
feature Γά is predictable (after C_1 it must occur if none
of the other three possible features does), as (άl).

By the same token, the interpretability of 'ά' in Γτά as 'ά', is not in itself a reason for writing (άά). For
κΓτάά does not occur, and the sequence Γτά sounds as
much much as a unit as does Γάl in Γάl. So why not write
(άά).

The choice between (C_1, 2, 3 NC) and (C_1, 2, 3 a NC) being
a matter of expediency, I decide in favour of the latter
alternative because
(1) not only sequences of the type \( L-C_1,2,3 \text{ NC_7} \), but also
sequences of the type \( L-C_\text{a} \text{ NC_7} \) can be interpreted as
sequences with the pitch-mark written over the nasal-symbol;
(2) uniformly applied, this device of writing the pitch-mark as
far to the right as possible, saves us an objection against the
interpretation of \( L-m\text{almalma}_7 \) 'to swim around' as \( (\text{mamalma}) \).
The at least conceivable item \( L-m\text{almalma}_7 \) would now have to
be interpreted as \( (\text{mama})\text{almalma}_7 \), and could not be confused with
the former. For an existing case with \( L-\text{NN ...}_7 \), take
\( L-t\text{u}n\text{ug}^0\text{a}_7 = (\text{tumug}^0\text{a}) \) 'Yes, I am wading'. The interpretation
of items of the type \( L-\text{C N \&}_7 \), and hence of \( L-m\text{almalma}_7 \),
will be discussed in 5.3.2. That uniform application of the
device in point is important, will be shown in 5.3.3.

5.3 As for point (1) in the preceding section, in addition to
the non-occurrence of \( L-C_\text{a} \text{ N \&}_7 \), it is to be considered that
an opposition between \( L-C_\text{a} \text{ N \&}_7 \) and \( L-C_\text{a} \text{ NN \&}_7 \), and between
\( L-C_\text{a} \text{ NC}_7 \) and \( L-C_\text{a} \text{ w\&NC}_7 \), is factually indemonstrable. And as
pointed out in 4.20, there are cases where sequences of the
former types alternate with those of the latter, for instance
\( L-\text{u}_7 \) with \( L-\text{uwul}_7 \).

One may therefore wonder how far there is also phonological
point in using the IPA-labels 'vowels' and 'consonant' for the
sort of elements in between the extremes of sequences \( L-C_\text{a} \text{ NC}_7 \).
As far as that goes, the occurrence of \( L-\text{k\&ls}_7 \) 'grouse' etc.
(see 4.19) is actually an indication that the nasals (the plain
ones at least) cannot be simply equated with consonants, and that
a chart of Heiltsuk phonemes would have to mention at least the
following four headings: (1) consonants (never pitched) ; (2)
nasals (now pitched, i.e. 'syllabic', now without pitch, i.e.
'consonantic'); (3) vowels and diphongs (always pitched); (4)
syllabifiers. Instead of the word 'syllabic' one could
of course prefer 'vocalic', and instead of 'syllabifiers' one could
talk of 'tonemes' or even 'vocalifters'.

That it is not possible to drop the fourth category, and to
incorporate the syllabic nasals as as many elements in the third
category, already follows from the occurrence of words with two
vowels but only one instance of pitch, as in \( L-\text{d\&n\&}_7 \) 'to pull'
and the alternant \( L-\text{\&ul}_7 \) of \( L-\text{\&l}_7 \).

Further, with a separate category of syllabifiers it would
become possible to describe the /ďuľ/ / 'ľuwl/ alternation as due to indifference of the 'localization' of the syllabifier, i.e. of the point where the pitch is highest or lowest. If, that is, we can interpret the /ď/ in /ďuľ/ and the /ď/ in for instance /ľďľľ ľm/ in such a manner that they lose their status of vowels. For vowels, it has been said, are inherently pitched.

5.3.1 Now, the neutralization of the opposition between (... NC...) and (...аNC...) after C', at once helps us understand why ´ /C Backbone of /NC/ and ´ /C Backbone of /NC/ do not occur, if we assume two things.

(1) The following correlation holds:

\[
\begin{align*}
\text{N} & : \text{N} \\
\text{u} & : \text{u} \\
\text{i} & : \text{i} \\
\text{w} & : \text{w} \\
\text{o} & : \text{o}
\end{align*}
\]

Taking a moment for granted the occurrence of glottalized nasals and glides, an arbitrary couple of symbols can then be dropped out the following four: 'i', 'u', 'w', 'y'. For typographic reasons I maintain 'i' and 'u', for the palatal and bilabial glide, respectively.

(2) /ďe/ = (ai) and /ďaw/ = (аu). Structurally, (ai) and (аu) are then on a par with (аN), while the oppositions (C,aC) vs. (C,aC) and (C,aC) vs. (C,aC) are neutralized, exactly as is that between (C,aNC) vs. (C,aNC).

This interpretation of /ďi,u,ey,aw/ fits in with the observation in 4.9.4 that /ďC /C_{1,2,3} еy/ and /ďC /C_{3} św/ do not occur, whereas /ďC /C_{4} ey/ and /ďC /C_{4} św/ do. The case of /ďňslśćęńčá/ is exceptional, and, for that matter, informants accepted /ďňslśćęńčá/. Opposition between /ď/ and /ď/, in the indicated environment cannot be demonstrated or even made plausible anyway.

Morphologically, the interpretation has but advantages. Consider the following series of items:

| /ďtak/ | (tak) | 'He-right-here is wading' |
| /ďtw/ | (taď) | 'He-there-with-you is wading' |
| /ďtey/ | (taď) | 'He-down-there is wading' |

| /ďtµk/ | (täšk) | 'Yes, he-right-here is wading' |
| /ďtµł/ | (täšł) | 'Yes, he-there-with-you is wading' |
| /ďtäšl/ | (täšł) | 'Yes, he-down-there is wading' |
For the sort of reasons mentioned in 5.2, all instances of \[\text{C}_4\text{sy}_1\] and \[\text{C}_4\text{aw}_1\] will be interpreted as \((\text{C}_4\text{i})\) and \((\text{C}_4\text{u})\), respectively.

5.3.2 The category of nasals, proposed in 5.3, should now be understood as just part of the wider category of resonants. The symbol 'R' will henceforward be used to represent any member of this category.

The items \[\text{Lâdi}_1\] and \[\text{Lâuwâl}_1\], \[\text{Lâkâms}_1\] and \[\text{Lâkâms}_1\], can now be described as all of them containing a sequence of the type \((\text{RRR})\). Presence of but one syllabifier over two resonants at the same time, the first of which is a glide, can then be held responsible for the alternation. And we write \((\text{Lâdi})\) and \((\text{Lâkâms})\).

It should not go unmentioned, however, that as far as the present stage of the morphological analysis of the corpus allows to say, the alternation obtains with atomic morphemes only. The item \[\text{Lôiyôm}sâlâlû_1\] 'brailer; dip-net', for instance, from which a root \(\text{Lôiyôm}\) can be abstracted \(^8\), never sounded \(\text{Lôiyôm}sâlâlû_1\).

On the other hand, the item appeared to have a variant \[\text{Lôiyôm}sâlâlû_1\]. This reduction of the feature \([\text{i}]_1\), and in other items, of \([\text{u}]_1\), obtains only after fricatives and aspirated plosives.

The \([\text{u}]_1\) in items like \[\text{Lôiyôm}sâlâlû_1\] (a synonym of \[\text{Lôiyôm}sâlâlû_1\]), and the \([\text{i}]_1\) in items like \[\text{bûwâk}_1\] 'pregnant', correspond positionally to \([\text{IN}]_1\) and \([\text{wN}]_1\) in \[\text{Lâkâms}_1\] and \[\text{Lâuwâl}_1\], respectively. And as expressed in the correlation proposed in 5.3.1, \([\text{IN}]_1\) and \([\text{u}]_1\) in \[\text{IN}_1\] and \[\text{wN}_1\] are but environment-coloured features contracted by the nasal by virtue of being syllabic (otherwise than in word-initial position, as in \[\text{Lâkâms}_1\]). Given further the assumption that resonants in general also sound syllabic when conjoined with another resonant in what I shall call a syllabic cluster, the mentioned correspondence warrants the interpretations \[\text{Lôiyôm}sâlâlû_1 = (\text{ciûlû})\) and \[\text{bûwâk}_1 = (\text{buûk})\).

Items like \[\text{dûnûlûm}_1\] can at once be interpreted as \((\text{dûnûlûm})\), because the feature \([\text{u}]_1\) is the same feature that would be contracted by the nasal if it were syllabic by itself.

But more important, if \((\text{a})\) could be described as the sixth resonant, say as the laryngeal glide, we could at once interpret \[\text{bûwâ} \] 'to flee, to escape', \[\text{dûyû} \] 'to wipe', \[\text{gûyûlû} \] = \[\text{gûyûlû} \] 'long (ago)', \[\text{kôwâbuwâ} \] '(man's) shirt' as \((\text{bûû}), (\text{dûû}), (\text{gûûlû}), (\text{kôwâbuû}).\) For the reason stated in the preceding
section, ['dänä'] 'to pull', ['wälk'] 'to arrest' would be interpretable as (dänä), (wälk). (cf. ['dänkærēk'] 'purseine-fishing' = (dänkærēk), and ['wälk'] 'imprisoned (person)' = (wälk).)

5.3.3 At this point, taking a moment for granted the actual interpretability of (a) in the suggested manner, another illustration can be given of the importance of the device of writing the syllable over the last member of a syllabic cluster, however composed.

The item ['qölalwy'] 'narrow escape' presents a case of a syllabic cluster with three members. By interpreting it as (qölalwy), no confusion can arise with an item (qölalwy), that would sound ['qölalwiy'].

5.4 After ['x'], the sequences ['?'] and ['?'] do not occur (cf. 4.18). This, and for instance a comparison of ['mål?änx'] '2 years', ['múx?änx'] '4 years' (see 4.15; the extension of resonance is taken for granted), and ['skå?änx'] '5 years', suggests the following correlations:

\[
\begin{align*}
\text{['N]} & : \text{['N]} = \text{['N]} : \text{['N]} \\
\text{['y]} & : \text{['y]} = \text{['y]} : \text{['y]} \\
\text{['w]} & : \text{['w]} = \text{['w]} : \text{['w]}
\end{align*}
\]

The category of resonants then comprises ten members: (m), (n), (h), (n), (l), (i), (i), (u), (o).

The syllabic glottalized resonants have but a limited distribution (cf. 4.4) Examples of their occurrence after fricatives, with the glottalization indicated before the resonant, to make easier typewriting, are (mål?änx),(múx?änx),(skå?änx) - the interpretations of the three above items- and also ['qölifla'] = (qölifla) 'to finish', ['xápox?d'] = (xápox?d) 'little child', ['páx?it] = (páx?it) 'to start working; to reach with the hand', ['pix?eyt'] = (pix?eyt) 'it gets mouldy', ['åx?åsdíså'] = (åx?åsdíså) 'to drag a boat up the beach'. At the beginning of a word: ['få'] = ('få') 'to row (backwards)', ['dq?å'] = ('dq?å') 'to believe'.

Only rarely does a syllabic glottalized resonant occur after another singly syllabic plain or glottalized resonant. From Mr. Campbell can be cited ⟨'tiʃitey⟩ 'they-down-there are rowing', ⟨'hùtuq'ey⟩ 'they-down-there are vomiting', ⟨'hufihi⟩ 'they-down-there', and the sequences ⟨'u'⟩ and ⟨'u'umk⟩ in items such as ⟨'daq'adas'ah⟩ 'he-there-with-you is being seen' and ⟨'daq'adas'umk⟩ (?) 'Yes, he-right-here is being seen'. But with all of these items the phenomenon can be observed which has been discussed in 4.19.1 on the occasion of ⟨'hiʃina⟩, viz. that the sound of what is here transcribed as ⟨'⟩, is hardly different from that of a preglottalized glide. For that matter, beside ⟨'daq'adas'ah⟩, from Mr. Campbell could be elicited ⟨'daq'adas'wi⟩ 'he-down-there is being seen'.

Now, this is not to suggest interpretations ⟨'iʃita!⟩ etc. For as pointed out in 4.17, sequences ⟨'u'⟩ do not occur at all (apart from free variation), any more than sequences ⟨'i'⟩. So sequences ⟨'u'⟩ and ⟨'i'⟩ can be interpreted ⟨'u'⟩ and ⟨'i'⟩, respectively. Thus: ⟨'daq'adas'⟩. The above items ⟨'tiʃitey⟩ etc. can then be interpreted as ⟨'iʃita!⟩, ⟨'hufihiq'af⟩, ⟨'hufihi⟩, ⟨'daq'adas'⟩. But we have to add the stipulation that the 'progressive effect' of a syllabic glide on a following syllabic glottalized glide is diminished or zero, if the vowel-parts of these glides are identical.

To this can be added that, in Mr. Freeman's speech, an item such as ⟨'lawk'ala'shus'ux⟩ (also: ⟨'ux⟩) actually alternated with ⟨'lawk'ala'shus'ux⟩ 'he-there-with you is being coerced'.

5.4.1 On the other hand, syllabic glottalized resonants may also form a syllabic cluster with preceding plain resonants, and examples of this are legion. ⟨'u'ix'it⟩ 'to do s.th. a second time' (Mr. F.) is a case in point. The more emphatic speech is, the more the item sounds as ⟨'u'ix'it⟩. Applying the device of writing the syllabifier over the right-most resonant, the interpretation is ⟨'u'ix'it⟩.

Other examples are (the ⟨'⟩/⟨'⟩ or ⟨'⟩/⟨'⟩ alternation not indicated in the narrow transcriptions):
The above interpretations make at once for a solution of cases of conglottalization. The pattern of the interpretations is \((\text{OR'RC} \cdot \cdot \cdot)\). Now, with a nasal preceding in the cluster and, say, an (i) following, this pattern would be realized as \((\text{CWN'IC} \cdot \cdot \cdot)\) or \((\text{CWN'MIC} \cdot \cdot \cdot)\). The symbol '+' here represents a feature such as nasals contract when they are syllabic.

Thus, \(\text{[k} \text{ol'is}] \) will be written as \(\text{(k} \text{ol'is)}\) ('to lie down on the beach').

5.4.2 With (a) as just another resonant, the following interpretations need no further comment:

\(\text{[w'a} \text{dam}] = (\text{w'a} \text{m})\) 'fresh water' - cf. \(\text{[w'ap]} \) 'to dilute',
\(\text{[m'a} \text{dam}] = (\text{m'a} \text{m})\) - pl. of \(\text{[m'a]} \) 'to shake hands',
\(\text{[zixsista} \text{is}] = (\text{zixsista} \text{is})\) 'to push down, over'.

With a cluster-final glide, one can then expect the appearance of a diphthong. Thus, \(\text{[k} \text{ol'is}] \) 'to sit down on the beach' is interpreted as \(\text{(k} \text{ol'is)}\).

Morphologically, for that matter, \(\text{(k} \text{ol'is)}\) and \(\text{(k} \text{a'is)}\) are on a par: \(\{\text{k} \text{ol'is}\}\) and \(\{\text{k} \text{a'is}\}\) are their analyses.

(cf.: \(\text{[k} \text{ol} \text{axd'm2a}] = (\text{k} \text{ol} \text{axd'm2a})\) 'bed' and \(\text{[k} \text{a'is}] \) 'chair'.)

As suggested by the just cited examples, the resonant (a) then has a preglottalized counterpart (\(\text{a}\)), sounding \(\text{[s'a]}\) when syllabic. \(\text{[s'a} \text{liut}]\) 'to blame s.o.' could therefore become \(\text{(s'a} \text{liut})\).

The only problem, however, is that it is unclear what a consonantie realization of the tentative phonemes (a) and (\(\text{a}\)) would sound like.

5.5 As for (a), it is no use trying to identify \(\text{[h]}\) as its consonantie realization. \(\text{[h]}\) occurs in morpheme-initial position only, but knowing this is not sufficient to decide if \(\text{(sa} \text{p} \text{a} \text{u} \text{a})\) 'waste meat' (cf. \(\text{[s'ap]}\) 'to skin') is to be pronounced \(\text{[s'eyp} \text{a} \text{w} \text{a}]\) or \(\text{[sh} \text{p} \text{a} \text{w} \text{a}]\). The items \(\text{(t'd)} = \{\text{t-d}\} \)
'to wade' and \( \lambda \alpha = \{ \lambda - \} \) 'to split up with a wedge' are there to show that a morpheme-boundary after the very first element of a word, is at least conceivable.

On the other hand, the occurrence of \( \text{hämifilá} \) 'cooking' and \( \text{hänxalá'ils} \) 'barrel for catching rainwater from the roof', as well as of \( \text{qumkó} \) 'dam', \( \text{lawáx'ilá} \) 'packing and carrying on one's back', is still an unsolved problem. For \( (a) \) does not normally occur in a low-pitched cluster. From \( \text{dása} \) 'to dive for something' one can derive \( \text{dasey} = (\text{dasaf}) \) 'he-down-there is diving for something'. But \( \text{pálá} \) 'to work' occasions \( \text{pálí} \) 'he-down-there is working'.

Now, the sequence \( \text{hän} \) does not occur other than word-initially. \( \text{heý} \) and \( \text{hän} \) do, but are then preceded by \( \text{x} \) (cf. 4.19). So in the latter position these two sequences can be interpreted as \( (\text{hó}) \) and \( (\text{hän}) \).

One could therefore try to interpret \( \text{hämifilá} \) and \( \text{hänxalá'ilás} \) as \( (\text{ámifilá}) \) and \( (\text{ánxalá}) \), respectively. That is, one could assume that

- the consonantic \( (a) \) occurs word-initially only, and is always accompanied by the feature \( (\#h) \);
- the at least conceivable opposition between \( (\text{áa} ñù) \) and \( (\text{áa} ñù) \) is neutralized, as is that between \( (\text{a} ñù) \) and \( (\text{a} ñù) \) (cf. 5.2 and 5.3.1).

By the same token, \( \text{qumkó} \) and \( \text{lawáx'ilá} \) would have to be interpreted as \( (\text{ámkó}) \) and \( (\text{ánx'ilá}) \). Also, \( \text{hámisá} \) 'to eat' could then as well be interpreted \( (\text{ámsá}) \); \( \text{lawókó} \) 'pity' as \( (\text{áwókó}) \); \( \text{eykwá} \) 'to win (a game, a race); to succeed' as \( (\text{ékwá}) \).

Even so, these interpretations are objectionable. It is not attractive to have transcriptions that do make separate mention of the feature \( (\#h) \), as in \( (\text{hímás}) = (\text{hímás}) \) 'chief', and transcriptions that do not do this, such as \( (\text{ámifilá}) \) and \( (\text{ámsá}) \).

Moreover, the sequences \( \text{hän}, \text{heý}, \text{law} \) may occur in other positions than just word-initially, after \( \text{x} \) or, as part of a syllabic cluster, after \( (a) \). As illustrated by the following examples, one may also find the sequences in point after a vowel or diphthong that is itself preceded by word-initial \( (\#h) \) or \( (\#l) \). Take
The sequences [hâN̂], [heỹ], and [haw̃] can then be treated in a parallel manner. Thus, [hâmsâ] is interpreted as (haâmsâ), [hâmgifl̃] as (haâmgifl̃), [hânâkâl̃] as (haânkâl̃), [heyyxǐf̃] 'to sharpen a knife'.

As a matter of fact, the consonant-cluster (ha) can be taken to reduplicate in a resonant-like manner, in many cases at least. The plural of [mûwâ] = (muâ) 'to fetch with a boat; to get a person to the shore with a boat' is [mâmûwâ] = (mâmuâ). That of [nâqâ] 'to drink' is [nânhâqâ] = (nânhâqâ). But the pattern (R_c'R_c ...)-R_c means: consonant resonant--is also to be recognized in (haâmsâ) 'to count'--,(haânhba) 'to fetch with a boat' tied up to the wharf'--.
(haf'afìzqōlà) pl. of (haf'afìzqōlà).

5.5.2 Wherever they are heard, [¯hā?] and [¯'ā?] can be interpreted as (hā) and ('ā). Thus, [¯hāllā?] 'to rest' becomes (hāllā); [¯'āxō'āxōnf?] 'thrush': ('āxō'āxōnf); [¯hāslā?] 'to breathe': (hāslā); [¯'āqā?] 'to come': ('āqā).

5.5.3 Items beginning with [¯h?] or [¯] may also display the pitch-pattern of [¯dana?]. One for instance finds [¯hānēy?] '(boat) lying on the water', [¯hāfānkōlā'] 'week-days', [¯'ālā?] 'to bury; funeral', [¯'āwā?] = [¯'ī?] '(and) then' (see 4.9.3).

Because definitely low or high pitch is always indicated, the following interpretation of the above items is possible: (hānāf), (hauf'nakōlā), ('alā), ('auā).

5.6 Let C₁ represent any plosive, fricative, or consonantic resonant out of set (1) in 4.9, C₂ any one out of set (2), and so on. But let C₄ represent any uvular. Further, let C' represent any plosive or fricative out of set (1), or a consonantic resonant out of set (1) in so far as it is followed by a long vowel. C₂ and C₄ then, have a corresponding meaning. Finally, let every symbol C' represent the word-boundary as well.

With these symbols, the environments in which long, high-pitched vowels may occur, can be specified as follows:

\[ [\bar{\neg}C₁,2,3,4 \in C₁',2,3,4,7] \]
\[ [\bar{\neg}C₁,2,3 \in C₁',2,3,4,7] \]
\[ [\bar{\neg}C₁,2,3 \in C₁',2,3,4,7] \]
\[ [\bar{\neg}C₁,2,3 \in C₁',2,3,4,7] \]

Low-pitched long vowels occur in similar environments. This can be illustrated with the inversion of pitch a high-pitched root may undergo under the influence of certain suffixes. [za₆kā?] 'to push (s.o.) with a stick' is regularly connected with [za₆xsūt?] 'to push through s.th. soft'.

Sequences [\bar{\neg}C₄ \in C₄'] are not to be found, only [\bar{\neg}C₄ \in C₄,7]. The latter sequences are always interpreted as (C₄') and (C₄a). Obviously, the vowels are considered syllabic resonants.

As for the type [\bar{\neg}C₁,2,3 \in C₃,7], the choice is between an interpretation as (C₁,2,3 \in C₃) or as (C₁,2,3 \in C₂,4). The former alternative is to be preferred, as presence of [\bar{\neg}a] puts a restriction on the sort of plosive/fricative that may
follow anyway.

5.6.1 Low-pitched short vowels may also occur in the indicated environments, though with the further restrictions that they do not occur word-finally or before a consonantic resonant, and that they appear in a predictable manner in between plosives/fricatives that cannot form a cluster (see 4.9 ff.).

Thus, the [-\] in for instance [-\z\p\n\] 'Japanese man' and [-\m\t\] 'quivering' can be eliminated from transcriptions, hence (z\p\n) and (m\t).

Theoretically, [-\j, \a, \i\] in the indicated environments could be considered 'coloured shwas', and hence be eliminated as well. In practice, it is unfortunately impossible to distinguish consistently or to prove opposition between [-\j, \i\] and [-\j, \a\] and [-\j, \a\] (see also 4.9.3 ff.) For instance, [-\d\\s\u\t\] 'to X-ray s.o.' (which is related to [-\d\o\l\d\] 'to watch') may also sound [-\d\\s\u\t\] and even tend towards [-\d\\s\u\t\]. And one now hears [-\p\q\s\a\] 'to lay a board flat on the ground', now [-\p\q\s\a\]. The morpheme-structure of the latter item is \{p\q\s\a\}.

Even in the case of [-\m\r\x\a\] 'to punch', where the [-\j\] may easily approximate [-\\i\] , it is by morphological criteria only that the [-\j\] can be assigned the status of a short and eliminable vowel. For [-\x\] happens to turn into [-\n\] under the influence of 'softening' suffixes, for instance \{-\\a\d\}\. Thus, from the relationship between [-\m\r\x\a\] and [-\m\n\s\a\] 'drum', we could conclude to the eliminability of [-\j\] in the former item. Still, [-\m\r\x\a\] is an acceptable pronunciation.

But if one wishes to avoid transcriptions the adequacy of which is dependent on the adequacy of one's morphological analyses, the only alternative left is to interpret [-\j\], [-\a\], and [-\i\] in the indicated environments as (1), (\a), and (\i). On the whole, this alternative is more attractive because it saves quite a number of rules for the pronunciation of transcriptions. For the intercalation of [-\i\] in for instance * (p\q\) 'to taste' would require another rule than that of [-\i\] in * (k\x\m\l\) 'to close both eyes'. In the former case we have a consonant of set (1) followed by one of set (4), in the other a consonant of set (2) followed by
Notice that in the case of \( -m - x_a - a \) one could still write \( * (m - x_a \) or \( * (m - x_a \) are excluded anyway. In between \( -m - \) and \( -x_a \) here, only \( /a, \), \( f, \), \( l/i \) can occur. But in between \( -k - \) and \( -s \) in for instance \( -k - s_a - a \) \( -x - a \) because \( -x - s, \) \( * \), \( x - a \), \( a, \) \( a \) can have \( /a, \), \( f, \), \( l/i \), \( x, \) \( a, \). For the sake of a uniform treatment of the low-pitched vowels, \( -m - x_a - a \) will be interpreted as \( (m - x_a), \) \( -k - s_a - a \) as \( (k - s_a), \) \( -p - x_a - s - a \) as \( (p - x_a - s - a) \).

5.7 In all cases where in between \( ? - \) and a consonant nasal or glide, a vowel with 'neutral' pitch is heard, the value of this vowel is predictable. After \( ? - x \) or \( ? - m \), \( ? - a \) is heard; after \( ? - e \) or \( ? - i \), the vowel \( ? - a \). Examples: \( ? - x - b - a - l - b - l - a \) 'to sharpen a knife', \( ? - x - b - a - l - b - l - a \) 'murdered person', \( ? - t - x - a - n - b - l - a \) 'quivering of the arm', \( ? - x - t - a - x - l - o - l - a / ? - x - t - a - x - l - o - l - a \) 'sitting on the foot-end of a bed'.

Moreover, besides \( ? - x - b - a - l - b - l - a \) one hears \( ? - x - b - a - l - b - l - a \). As also illustrated by the examples cited in 5.5.1, the 'intercalated vowels' in point need not always be present. We therefore write \( (x - b - a - l - b - l - a), \) \( (A - x - a - k - o), \) \( (m - t - x - a - n - b - l - a), \) \( (k - o - x - a - t - l - a - l - a) \).

5.8 In items such as \( ? - h - a - n - b - l - a \) 'to jump (said of a salmon or herring)' and \( ? - q - s - l - a - h - a - n - b - l - a \) 'my wife', one hears lengthening of the resonance of \( ? - m \). In interpretations, the mere adjacency of a high pitch-mark and a low one is sufficient to signalize this. Hence, \( (l - a - n - b - l - a), \) \( (q - s - l - a - h - a - n - b - l - a), \) \( (c - s - l - a - h - a - n - b - l - a) \) will be used for both \( ? - c - s - l - a - h - a - n - b - l - a \) and \( ? - c - s - l - a - h - a - n - b - l - a \) (cf. 4.1.9.2).

In the same vein, \( q - n - y - a \) 'earthquake' will be written as \( (n - n - y - a), \) \( (w - n - n - w - a - s / w - n - n - w - a - s) \) 'to sneak out of a house' as \( (u - n - n - y - s) \).

5.9 All of the plosives and fricatives mentioned in 4.9, are word-distinctive. (See also Mr. Kortlandt's remarks on this point).

The shape of the Heiltsuk system of phonemes, therefore, is as follows.
The numbers (1) - (4) correspond with the features contracted by a dependently or independently syllabic nasal when it is preceded by a consonant or consonantic resonant. Thus, because /d/ is a phoneme of set no. (1), /dnd/ sounds /d̪nd̪/, and /d̪nd̪/ 'bell' sounds /d̪n̪d̪n̪/. Because /u/ is a phoneme of set no. (3), /unâl/ 'to sneak' sounds /un̪âl̪/, and so on.

5.10 This set of phonemes and the various rules for the pronunciation of broad transcriptions, which rules have been developed in the foregoing arguments, are still to be completed with a set of morphonemic rules. But one should not expect the latter rules to be a simple reedition of those mentioned by Boas for Kwakiniul. For instance, according to Boas, "The voiced continuants m, n, l, ʃ, ɣ become ʰm, ʰn, ʰl, ʰʃ, ʰɣ when sonantized or glottalized". But for Heiltsuk this does not hold true, as can be seen from the case of /k̪0l̪fs/ = /k̪0l̪fs/, discussed in 5.4.2. Rather, the suffix can here be said to contract a glottal stop. Also, a number of suffixes contract /h/ = /h̪/, instead of 'hardening' or 'softening' a root-final fricative. Again, the representativity of Kwakiniul for the North-Wakashan type of language should not be taken absolutely.
NOTES


3) For in that same Preface Boas complains that in Rivers Inlet itself "only two sickly men could be found who were able to dictate", but who could not translate. Thus, what Boas actually collected were stories from Rivers Inlet, to which were added a few other ones in genuine Heiltsuk, such as those told by Mr. Willie Gladstone himself (e.g. "The Raven and the Fisherman", p. 10 ff.)


6) Also, one hears /-/gyá\l/', /-/gyál/, or even /-/gyá\l/ 'long (ago)', not /-/gyá\l/. Instead of /-/gwaká/, one hears /-/gwáká/ or /-/gwáká/ 'to give a name (to a person, ceremonially)'.

7) The symbol has been taken over from Boas. Notice that in Heiltsuk the pitch of the stem/root and that of the suffixes may be interdependent. So far the rules governing this are only partly understood.

8) Cf. /-/cfxit/ 'to dip up; to serve water'. Strictly speaking, this item might contain a root */cfx/. But Boas mentions a Kwakiutl root */tšk/, with the meaning-aspect 'to draw water'. Cf. Franz Boas & George Hunt, "Kwakiutl Texts", in: The Jesup North Pacific Expedition (edited by Franz Boas), Memoir of
To this should be added that the parallel holds because (a) happens to be the first high-pitched resonant of the word here. Otherwise it would have formed a non-glottalized syllabic cluster with the (f). Compare the following series:

(a) (māsām) one dollar  (b) (māsm'īls) one quart
   (māsāf) two dollars       (māsm'īs) two quarts
   (iūtx'omā) three dollars (iūtx'om'īls) three quarts
   (mūsām) four dollars     (mūsām'īls) four quarts
   (skūsām) five dollars    (skūsām'īls) five quarts

(a') (mfnkībā) one cloth  (b') (mfnkīblī) one blanket
   (mālkībā) two cloths     (mālkība'fī) two blankets
   (iūtx'omībā) three cloths (iūtx'om'ība'fī) three blankets
   (mūkībā) four cloths     (mūkīb'īlī) four blankets
   (skūkībā) five cloths    (skūkība'fī) five blankets

(a) and (a') run parallel, for both {-s(ā)m} and {-ba} take the reverse pitch of the root. But (b) and (b') diverge, and not only because {-iīl} does not simply take the reverse pitch of the root. As can be seen, (a) is more often than not 'irreactive'.