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The Southern Wakashan one-foot word*

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Several historical and synchronic phonological patterns in the Southern Wakashan languages Nuuchahnulth, Ditidaht, and Makah — including the restriction of stress to the first two syllables, second-syllable epenthesis in Makah, and vowel syncope and shortening in third and later syllables — seem to be converging on the development of a prosodic word consisting of a single foot. Makah exhibits the traces of two separate such developments, suggesting that some internal or areal feature is particularly conducive to this change.

1 Introduction

The Southern group of the Wakashan language family is usually considered to consist of three languages: Nuuchahnulth and Ditidaht, spoken on the west coast of Vancouver Island, and Makah, spoken on the tip of the Olympic Peninsula. Nuuchahnulth comprises a continuum of closely related dialects from Kyuquot Sound in the north to Barkley Sound in the south, while speakers of Ditidaht and Makah traditionally occupied smaller territories.

Several historical and synchronic phonological patterns in these languages seem to be converging on the development of a prosodic word that consists of a single initial foot. One such pattern is stress. In the dialects for which stress is described — Makah and Tseshaht Nuuchahnulth — stress is restricted to the first two syllables. I argue that Makah builds an iambic foot over the first one or two syllables, adducing evidence both from its stress pattern and from a process that epenthesizes long vowels into the second syllable.

Another relevant pattern shared by all of Southern Wakashan, and apparently dating from the Pre-Southern Wakashan period, is that of variable-length vowels, which are shortened in third and later syllables. Similar patterns of vowel shortening and deletion in third and later syllables continue in the modern languages.

What all these patterns have in common is that they treat the first two syllables as phonologically stronger, while weakening or eliminating entirely third and later syllables. I argue that this can be attributed to the structure of the Southern Wakashan prosodic word, which builds a foot over the first one or two syllables, leaving the rest of the word unfooted. These phonological patterns, then, weaken or eliminate *unfooted* syllables.

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In Sections 2 through 4, I discuss the relevant patterns: Makah stress and epenthesis, vowel deletion in third and later syllables, and the behavior of variable-length vowels. In Section 5, I present arguments for the one-foot word, and discuss possible explanations for this development. Section 6 concludes.

2 Makah feet

A number of phonological patterns in Makah indicate that the language builds an iambic foot at the beginning of the prosodic word. Here I support this with evidence from stress, epenthesis, and historical lengthening and shortening.

2.1 Stress

Stress in Makah is restricted to the first two syllables of the word, and appears to be predictable. The following generalization describes the observed stress placement on most or all Makah words, with a few illustrative examples (all data not followed by a reference are from my own field notes).

- (1) a. Makah: stress the first syllable if it is heavy, otherwise stress the second syllable. Only syllables containing long vowels are heavy. (Jacobsen 1979b, Davidson 2002)
- | | |
|----------------------------------|------------------------------------------|
| b. LL | LH |
| tet.ʔétq.kuk ‘cucumber’ | q ^w ik.yáa.ʔaλ ‘what he gave’ |
| ʔa.tú.bi.tidš ‘but we (PAST)’ | ʔa.páa.sap.sii.cuχ ‘I like you’ |
| χa.ʔá.ʔa.piχ ‘little neck clams’ | λu.ʔúu.ʔap.du ‘we keep clean’ |
| H \acute{L} | H \acute{H} |
| čii.ʔiλ ‘dip’ (VERB) | šúu.yuuʔ ‘halibut’ |
| ʔáa.χu.wi.qaʔ ‘the men’ | dáa.daaʔ.ba.ʔaʔ ‘look at’ |
| dúub.ʔič.ke ‘you all ...!’ (IMP) | čiiχ.paa.ʔi.tid ‘there were six of us’ |

Following the universal foot inventory proposed by Hayes 1995, we may analyze Makah as building an iambic foot at the beginning of the prosodic word. Right-headed disyllabic feet (i.e. LH $\acute{}$, LL) are preferred — with LH $\acute{}$ the ideal iamb — but an iamb consisting of a single heavy syllable (i.e. H $\acute{}$) is preferred when the only alternative is a disyllabic foot of the shape *H \acute{H} or *H \acute{L} .

- (2) a. LL: (ʔa.tú).bi.tidš ‘but we (PAST)’ (Makah)
 b. LH $\acute{}$: (ʔa.páa).sap.sii.cuχ ‘I like you’
 c. H \acute{L} : (ʔáa).χu.wi.qaʔ ‘the men’
 d. H \acute{H} : (čiiχ).paa.ʔi.tid ‘there were six of us’

This, briefly, is how I arrived at this iambic analysis. Following Hayes, I assume that the only feet available to natural languages are trochees and iambs, that these are either binary or unbounded, and that syllables can be extrametrical

(i.e. unfooted). A couple of alternative analyses are then conceivable: a weight-sensitive trochee analysis (a) and an unbounded trochee analysis (b).

- (3) a. Weight-sensitive trochees, i.e. $\acute{L}L$ or \acute{H} ; initial L extrametrical.
- b. Unbounded trochees, i.e. \acute{H} , $\acute{H}L$, $\acute{H}LL$, etc.; stress leftmost heavy syllable, otherwise leftmost syllable; initial L extrametrical.

First, both these analyses include an odd extrametricality rule: the initial syllable is extrametrical only if it is light. Second, the unbounded trochee analysis predicts that a heavy syllable anywhere in the word will attract stress, if it is preceded only by light syllables. But the stress never occurs later than the second syllable, even in such cases, e.g. *babáqyuk^wúk?* ‘what are you doing?’.

Since, under Hayes’ theory, the best iamb is of the shape $L\acute{H}$, the iambic analysis expects processes that yield feet of this shape. The following section presents two such processes as evidence for this analysis.

2.2 Long vowel epenthesis

At least two processes in Makah appear to conspire to yield better initial iambs: a synchronic process of vowel epenthesis and a diachronic process of vowel epenthesis and shortening.

Synchronic epenthesis in Makah inserts a long vowel into the second syllable of a word, generally between a monosyllabic root and a following suffix, and only in order to break up clusters ending in a consonant with some glottalic feature, either voicing or glottalization. The quality of the epenthetic vowel is a copy of the root vowel (Jacobsen 1971).

- (4) a. $\acute{c}atáa$ -yak ‘pencil’, cf. $\acute{c}at$ -šíλ ‘write’ (Makah)
- b. $siq\acute{h}$ -bis ‘pus’, cf. siq -áqλ ‘pimple, abcess’
- c. $bisíi$ -pał ‘smell something’, cf. bis -šíλ ‘smell’
- d. $\acute{?}u\acute{x}úu$ - $\acute{?}u\acute{x}^w$ -a=s ‘I’m chewing’, cf. $\acute{?}u\acute{x}$ -šíλ ‘chew’
(Jacobsen 1971:2, Davidson 2002:356–463)

In a few cases, this epenthesis does not fall directly at the boundary between a monosyllabic root and its endings. Glottalizing suffixes can induce epenthesis to break up a CVCC root (a). Other exceptions are also observed (b).

- (5) a. $/lak\acute{c}$ -’ašs/ ‘light-inside’ → $laka\acute{a}\acute{c}a\acute{x}s$ ‘lamp’ (Makah)
(Jacobsen 1971:9)
- b. $/qa$ -(k)swii-/ ‘prick-through’ → qa -ksaawii-
(Davidson 2002:435)

Interestingly, the unusual fact that the epenthetic vowel is long — unusual in that epenthetic vowels tend to exhibit unmarked features — makes sense because this creates a long second syllable, yielding an ideal iamb of the shape $L\acute{H}$ over the first two syllables. In fact, in the data known to me, epenthesis occurs only after *short* initial surface syllables. If a long epenthetic

vowel were to occur after a long initial surface vowel, this would cast doubt on the iambic analysis, since *HH does not appear to be a good iamb in Makah.

The second process that has yielded better initial iambs in Makah is a historical change whereby the free (i.e. unaffixed) forms of most CVC roots have been appended with a long vowel in a pattern similar to synchronic epenthesis, often accompanied by a corresponding shortening of an original long initial vowel (Davidson 2002). The following examples include cognates from Tshahat Nuuchahnulth (N) and Makah (M) for comparison.

- (6) a. N wik ‘not’, M wikíi
 b. N nuuk ‘song’, M dukúu
 c. N tiič ‘alive, well’, M tičfi
 d. N taał ‘warm (in time of cold)’, M tałáa
 (Davidson 2002:88–89)

Just like synchronic epenthesis, this historical second syllable epenthesis and concomitant initial syllable shortening yield LH iambs. It should be noted here that Jacobsen 1996 implicitly suggests, through data glosses, an alternative analysis of historically appended vowels as formative suffixes — that is, as suffixes that derive free roots from bound roots. However, I follow Davidson in analyzing this process as purely phonological.

3 Vowel deletion

In this section, I present data on both synchronic and historical vowel deletion in Southern Wakashan that indicates that the first two syllables are relatively phonologically strong, and third and later syllables relatively weak.

3.1 Regular vowel deletion

All of Southern Wakashan exhibits severe vowel deletion patterns. Final short vowel apocope (a&c) and final long vowel shortening (b&d) are regular in Makah (Jacobsen 1971) and Kyuquot Nuuchahnulth (Rose 1981).

- (7) a. ʔaλ ‘two’, cf. ʔaλa-cx̣ ‘have two wives’ (Makah)
 q^walal ‘seagull’, cf. q^walala=bʔu ‘it was a seagull’
 b. biλa ‘rain’, cf. biλaa=ʔal ‘it’s raining’
 luulapi ‘hand’, cf. luulapii=sis ‘my hand’
 (Jacobsen 1971:14–17)
 c. /ʔuʃ-taq[L]-’i/ → ʔuuštaŋ ‘work!’ (Kyuquot)
 d. /mat-(y)a/ → mata ‘it was flying’
 /λawa-ʔi:/ → λawaʔi ‘he approached’
 (Rose 1981:27)¹

¹ Key: *i*, *a*, *u*: variable-length vowels, *i*ː, *a*ː, *u*ː: persistently long vowels, [L]: stem lengthening suffix, [R]: stem reduplicating suffix, “ʔ”: non-contracting glottal stop.

It is not clear whether final long vowel shortening is to be regarded as a phonological alternation; i.e. whether shortened vowels are phonemically short, or phonemic long vowels with phonetically shorter duration. Jacobsen 1971 and Rose 1981 — for Makah and Kyuquot, respectively — appear to regard this as a phonological alternation, using rule ordering to account for the fact that shortened final vowels do not delete like underlyingly short final vowels.

Final short vowels are deleted also in Ditidaht (Swadesh & Swadesh 1933). It is not clear whether Ditidaht also shortens final long vowels, but it appears from the text in Swadesh & Swadesh 1933 that it does not. Tseshah Nuuchahnulth neither deletes final short vowels, nor shortens final long vowels.

Regular patterns that delete non-final vowels are also observed. In Makah, V?V sequences (where V represents a short vowel) are regularly reduced by syncope of the first of these vowels (a), unless this first vowel is in the first syllable of the word (b).

- (8) a. ?uquqɪ=ʔi=š 'her name is', cf. ?uquqɪa=s 'my name is' (Makah)
 duub-ʔiks 'consume all', c.f. duuba=bit=duuk 'we would all'
 yuuy=?uq 'the morning', cf. yuuyu-padač 'walking around early'
 b. čiʔic 'butter clam', baʔas 'house', weʔič 'sleep'

Jacobsen 1979a remarks that Ditidaht regularly deletes the last short vowel of the word, though it is unclear whether this is to be analyzed as an etymological process or a synchronic, phonological one. This pattern is apparent from the following Ditidaht (D), Tseshah Nuuchahnulth, and Makah cognates.

- (9) a. D waaʔλ 'said', N waaʔaλ, M waaʔaλ
 b. D qaʔawc 'burden basket', N qaʔuu-c, M qaʔawac
 c. D hit-ʔaqsɫ 'mouth', N -(ʔ)aqsu(ʔ) 'at the mouth', M -aqsɪ
 (Ditidaht: Swadesh & Swadesh 1933, Thomas & Hess)
 d. D -kʷ (final allomorph) 'resembling', N -kuk, M -kukʷ
 (Jacobsen 1979a)

Swadesh & Swadesh 1933 describe extensive syncope for Ditidaht.

- (10) a. "Non-final short stem-suffix vowels are syncope when followed by a single consonant or original consonant group a) in final position b) before a word-suffix c) before a short stem-suffix vowel; but if the consonant be a glottal stop ... syncope takes place regardless of whether the following vowel is long or short."
 (Swadesh & Swadesh 1933:201)
 b. /ʔaaχu-'uk/ → ʔaaχuʔk 'youths' (Ditidaht)
 /ʔadaa-(')iʔ-'aλ/ → ʔadaäʔʔaʔλ 'stayed at home, now'
 /yii-'atχ-'aq/ → yääʔtχaq 'yonder where they dwelt'
 (Swadesh & Swadesh 1933:202-203)

Rose 1981 describes a pattern of word-internal syncope in Kyuquot similar to that described for Ditidaht, though acknowledging that it is “not fully understood” (25). Generally speaking, this pattern deletes rightmost vowels first (a&b), then alternate vowels scanning leftward (c), syncopating as many vowels as permitted by the language’s phonotactics. Kyuquot generally deletes only short vowels in third or later syllables — including variable-length vowels (see Section 4) — though some cases of second-syllable deletion do occur (d).

- (11)a. /ħayu-čĩʔ/ → ħayučʰ ‘it went on for ten days’ (Kyuquot)
 b. /ʔu-kuk[R]/ → ʔuʔuk^wk^w ‘he resembled him’
 c. /his-iik^w-‘is-int/ → hisiik^wsint ‘he traveled along the beach’
 d. /mixt-k^wap[L]/ → miixtk^wp ‘he likes old people’
 (Rose 1981:24–26)

The first vowel of the word is never deleted, since in all the Southern Wakashan languages, every syllable — and by extension, every word — begins with one and only one consonant (see Sapir & Swadesh 1939:13).

3.2 Makah casual speech vowel deletion

Severe vowel deletions like those reported for Ditidaht and Kyuquot Nuuchahnulth also occur in Makah, but only in casual speech. The following casual speech tokens come from a small body of texts collected from two different speakers. Although more interesting patterns are probably waiting to be discovered, Makah casual speech syncope generally deletes short vowels in third and later syllables, targeting earlier vowels (a) as often as later ones (b).

- (12)a. wikilca ~ wikilica ‘you (PL) will not’ (Makah)
 ʔatχiiyʔuuq^w ~ ʔatχiiyuʔuuʔuq^w ‘(in) the night’
 wikiiʔtχdu ~ wikiiʔitχdu ‘(because) he didn’t .. us’
 waaʔaʰitduuk^w ~ waaʔaʰitduuk^w ‘she would tell us’
 ʔudaakaʰitwaad ~ ʔudaakaʰitwaad ‘he had (they say)’
 ʔucačʰeeʔsaʰqeyd ~ ʔucačʰeeʔisaʰqeyd ‘when we were going to’
 b. xadʔawšč ~ xadʔawišč ‘girl’
 wikaʰts ~ wikaʰits ‘I didn’t’
 čaʔawq ~ čaʔawiq ‘the water’
 q^wačaqk ~ q^wačaqak ‘(fresh) fish’

Casual speech syncope does not appear to avoid creating clusters of plain obstruents. Clusters beginning in glottalic (i.e. voiced or glottalized) consonants are also tolerated. Only clusters ending in glottalic consonants seem to be avoided. In fact, a few forms show syncope with concomitant short vowel epenthesis before glottalic consonants (a). This is not unusual, since glottalic consonants often induce epenthesis after tautosyllabic plain obstruents, as in

babatid 'white man'. Interestingly, the only example in my data of second-syllable deletion yields an ideal iamb (b).

- (13)a. duuwiqsubtids ~ duuwiqsubitdis 'our late father' (Makah)
 ?abeeqsubtids ~ ?abee?iqsubitdis 'our late mother'
 b. q^waḥḥtkduuk ~ q^waḥḥitkduuk 'that's why we would'

This reinforces the generalization developed so far that third and later syllables are more vulnerable to vowel deletion. Having established that Makah builds an initial iamb, I take this to suggest the generalization that the targets of syncope are mostly vowels *outside the initial foot*.

This claim makes an interesting prediction: words with initial long vowels should show deletion of *second* and later syllables, since only the first syllable is footed. However, I have not observed any such cases so far.

4 Variable-length vowels

Previous sections have established patterns in the Southern Wakashan languages that seem to treat the first two syllables of the prosodic word as phonologically stronger than third and later syllables. Another such pattern shared by these languages is the unusual phenomenon of *variable-length vowels*, which will provide additional insight into Southern Wakashan foot structure.

4.1 The behavior and origin of variable-length vowels

Variable-length vowels are pronounced long if they occur in either of the first two syllables, but short if they occur in third and later syllables.

- (14)a. ?u-naak 'have it', čapac-nak 'have a canoe' (Tseshaht)
 caqiič 'twenty', ca-caqič 'twenty each'
 kap-?uukt 'stolen goods', řaçax-?ukt '(fish) obtained by snaring'
 (Davidson 2002:29)
 b. ?u-naak 'he has it', ?uu-?uu-nak^w-p 'he has it too much' (Kyuquot)
 (Rose 1981:23–24)
 c. buu-daak-s 'I have four', řuča-dak-s 'I have five' (Makah)
 če-?iiḥ 'thirsty', tuřaay-iḥ 'drown in salt water'
 če-?iiks 'drink water', kařču-q^w-iks-s 'I'm eating a hair seal'
 (Jacobsen 1971:12)

Other long vowels are *persistently long vowels*, which are pronounced long no matter where in the word they occur.

- (15)a. čuučk-iics ‘bring all’, meʔiλqac-iics ‘bring a boy’ (Tseshahat)
 naaλk-sýuuč ‘have feet sticking out’, huuʔak-sýuuč
 ‘out of bed early’
 (Davidson 2002:30)
- b. ʔuu-baač ‘about’, ʔuuš-abaac ‘talk about’ (Makah)
 ʔu-ktiip ‘do to’, baqi-ktiip-iik ‘what are you ...-ing?’
 ʔuu-k^wiit-š-ʔaλ ‘start to make’, λuuš-akt-iit ‘make dry fish’

Jacobsen 1979a proposes that variable-length vowels are the unmarked case, dating back to a historical development in the Pre-Southern Wakashan period whereby all vowels became short in third and later syllables. Since then, persistently long vowels — the marked case — have slowly crept back into these languages by several routes. One of these is borrowing (Klokeid 1996).

- (16) ʔoopakoot ‘overcoat’ (Tseshahat)
 ʔawawatii *Kwakwala man's name*
 yak^waχiiχ *Makah man's name*
 haʔbaaxoowoʔoλ *woman's name*
 (Klokeid 1996:51, data from Sapir & Swadesh 1939)

Another historical source of persistently long vowels is reduction of vowel-glide sequences — *ay > ii, *aw > uu — first noticed by Haas 1969. This can be seen in these Tseshahat Nuuchahnulth and Makah cognates, where the Makah words are taken to preserve the original sequences.

- (17) N xuuč- ‘intoxicated’, M xuwic-
 N -’iik^w ‘given to, fond of’, M -’eyik
 N -’iit ‘hunting, collecting’, M -’eyaχ
 N -’uu ‘intending to get, camping out for the purpose of getting,
 waiting in ambush to get’, M -’awi ‘waiting for’
 (Davidson 2002:32)

Yet another source of persistently long vowels was a historical change in Makah whereby glottalized sonorants were lost, leaving compensatory (and persistent) lengthening on preceding vowels (Jacobsen 1979a).

- (18)a. N cuwit ‘silver salmon’, M cuuwit
 N huṛhaaq ‘wild rhubarb’, M huubaaq
 N čuṛṇa ‘vulva’, M čuuda (underlying form)
 N ʔuṛyi ‘medicine’, M ʔuuya (underlying form)
 (Davidson 2002:76)
- b. *-aṇuʔ > M -aadiʔ ‘along something’
 (Jacobsen 1979a:781)

The idea, then, is that variable-length vowels are an older pattern, but still regular in the modern languages, while persistently long vowels are a more recent development. This view is supported not only by the historical origins reconstructed for many persistently long vowels, but also by the fact that variable-length vowels are more numerous in the lexicon than persistently long vowels — at least in Tseshaht Nuuchahnulth (Jacobsen 1979c).

Our interest here in variable-length vowels lies in what they may reveal about the prosodic structure of the Southern Wakashan languages.

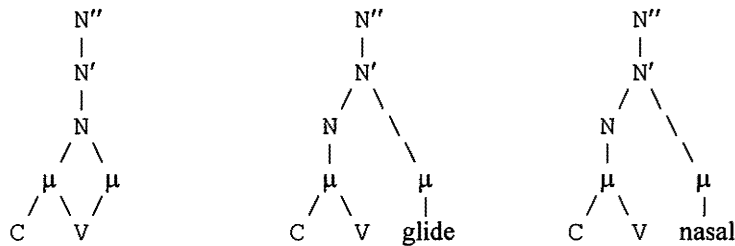
4.2 Variable-length vowels in Tseshaht

Both Wilson 1986 (for Southern Wakashan) and Stonham 1990 (for Tseshaht only) propose that the length of variable-length vowels is determined by a special foot built over the first two syllables: variable-length vowels are pronounced long only if they occur in this foot. I will refer to this as the special foot analysis. Stonham's version will serve to exemplify the analysis.

Stonham 1990 adduces several pieces of evidence indicating that Tseshaht Nuuchahnulth builds a special foot over the first two syllables — special in that it licenses certain prosodic structures that are not available to other feet later in the word. The behavior of variable-length vowels provides one piece of evidence for his proposal.

Observing several parallels between syllables containing variable-length vowels and syllables containing coda nasals, Stonham proposes that variable-length vowels are actually vowel-glide sequences, and that the glide component of a variable-length vowel occupies the same slot as a coda nasal, branching from the syllable rime (N'). Persistently long vowels, on the other hand, are linked to two moras, which are in turn linked to the nucleus (N).

(19) a. Persistently long V b. Variable-length V c. Coda nasal



Further, Stonham proposes that only in the first foot — which is built over the first two syllables — can glides and nasals link to the rime. In later feet, nasals link to the syllable (N''), and glides are lost. In the first foot, then, the glide part of a variable-long vowel is pronounced as vowel length, but in later syllables this part is lost and the vowel is pronounced short. Persistently long vowels are linked to the nucleus and are always pronounced long.

This analysis accounts for several properties of Tseshaht. For example, there are no surface coda glides in Tseshaht because they are pronounced as

vowel length or lost. Also, variable-length vowels and coda nasals are in complementary distribution — no syllable contains both. This is because the glide components of variable-length vowels occupy the same slot as coda nasals.

In addition, CV reduplication copies onsets and persistently long vowels (a), but not variable-length vowels (b) or coda nasals (c). In Stonham's analysis, this is because CV reduplication copies the nucleus but not the rime, so that coda nasals and variable-length vowels' glide portions are not copied.

- (20)a. ča-čawa-čič 'naming one' (Tseshahť)
 waa-waas-čič 'naming where ...'
- b. tu-tuut-š 'thundering (at intervals)', *tuu-tuut-š
 ʔi-ʔiih 'big here and there', *ʔii-ʔiih
 ti-tiič 'barely living', *tii-tiič
- c. čičims-čič 'naming a bear', *čičims-čičims-čič
 (Stonham 1990:131, 139)

Last, Stonham notes that both variable-length vowels (a) and coda nasals (b) are only ever followed by a maximum of two other coda consonants, but both short vowels and persistently long vowels can be followed by up to three coda consonants. This seems to suggest that something about a variable-length vowel fills a coda consonant slot.

- (21)a. ʔiihc.k^wi.sa.qa (Tseshahť)
 b. ʔuuc.ʔuu.wimth.we.ʔin, ki.cinkh.ʔim, ʔap.winqs.ʔi
 (Stonham 1990:140)

Stonham's analysis, then, accounts for the special behavior of variable-length vowels in Tseshahť by supposing a special initial foot. But the evidence that it is the presence or absence of a foot that is responsible for these patterns all comes down to the observation that the number of special syllables in the Tseshahť word is two, which happens to be the size of a foot. Other evidence diagnostic of feet — such as from stress — would be more compelling.

4.3 The Tseshahť foot

In fact, there is some evidence from Tseshahť stress to support the special foot analysis. However, the only promising aspect of Tseshahť stress for this analysis is that, as in Makah, stress in Tseshahť is restricted to the first two syllables of the word.

- (22)a. Tseshahť: if the first syllable is light and the second syllable is heavy, then stress the second syllable, otherwise stress the first syllable. Syllables containing long vowels and/or coda nasals are heavy.

(Wilson 1986, Stonham 1990, Davidson 2002)²

- | | | |
|----|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| b. | $\acute{L}L$
túh.çi.ti 'head'
káλh.šiλ 'appeared'
wí.ka.λuk 'now of (him) was not' | $L\acute{H}$
ha.wíi.ʔaλ 'now finished'
hi.ším.ʔuup 'gather together'
ha.čím.siq.sak.ʔi 'her brothers' |
| | $\acute{H}L$
húucs.ma 'woman'
máa.ʔak 'California whale'
qúuʔas 'person' (Sapir 1924:77) | $\acute{H}H$
ʔúu.q ^w aa 'likewise'
číms.míit 'son of Bear'
náac.saaλ 'now was looking at' |
- (Davidson 2002:25, data from Sapir 1924, Stonham 1994a, 1994b)

Wilson and Stonham essentially agree that the first two syllables are grouped into a prosodic constituent, and that the heavier syllable gets the stress, or if neither is heavier, the first syllable is stressed by default. Wilson, however, believes for theoretical reasons that no foot at all is constructed when both the first two syllables are light, though he seems to still consider them to form a constituent. By contrast, I assume that where there is stress, there is a foot.

However, the shape of the Tseshah't foot might not support Stonham's analysis of variable-length vowels. It is crucial to his analysis that the Tseshah't foot always contain two syllables. But the foot inventory proposed in Hayes 1995 suggests another analysis of the Tseshah't foot: a word-initial, weight sensitive trochee, either $\acute{L}L$ or \acute{H} , but not $*\acute{L}$, $*\acute{L}H$ or $*\acute{H}H$. This analysis would build feet as in (a). Compare these to Wilson's and Stonham's feet in (b).

- (23) a. $\acute{L}L$: (túh.çi).ti 'head' (Tseshah't)
 $L\acute{H}$: ha.(wíi).ʔaλ 'now finished'
 $\acute{H}L$: (máa).ʔak 'California whale'
 $\acute{H}H$: (číms).míit 'son of Bear'
- b. (túh.çi).ti, (ha.wíi).ʔaλ, (máa.ʔak), (číms.míit)
 (see data references above)

Under the alternative analysis that I am suggesting, Tseshah't would have only the foot shapes most preferred by weight-sensitive trochee languages: $\acute{L}L$ and \acute{H} (Hayes 1995). These feet would be initial, except when the first two syllables form a LH contour. Then a monosyllabic heavy foot — i.e. \acute{H} — after an extrametrical initial light syllable — as in *ha.(wíi).ʔaλ* — would be preferred to either $*\acute{L}$ or $*\acute{L}H$.

Other problems with Stonham's analysis may indicate that it is not quite right. First, if variable-length vowels are underlyingly vowel-glide sequences, why don't these glides affect the quality of the vowels they occur

² Davidson 2002 notes some counterexamples to the claim that coda nasals contribute to syllable weight in Tseshah't: λšλin 'foot' hšimʔawiʔaλ 'now became blood-covered', hštyinʔi 'the one at the bow' (page 26).

after? Second, Stonham observes (page 140) that coda nasals seem to inhibit length on preceding vowels. But his proposed foot structure doesn't seem to predict this. Persistently long vowels link to the nucleus, and coda nasals link to the rime, so they are not in complementary distribution and should cooccur.

The important point, however, seems to be that Stonham's analysis of variable-length vowels seems plausible for some stage of the language. It is possible that the variable-length vowel pattern originated when feet were always disyllabic, but is now completely morphologized, and based on syllable counting rather than on foot structure. I will pursue this possibility later in the paper.

4.4 The Makah foot

In this section, I look briefly at some aspects of variable-length vowel behavior in Makah, arguing that Stonham's 1990 analysis of variable-length vowels in Tseshaht is untenable for Makah.

First, I argued at length earlier in this paper in favor of an iambic analysis of Makah foot structure, under which Makah builds a single word-initial iamb of the shape LH̄, LL, or H̄. If it is correct, this analysis entails that the initial foot is monosyllabic in words with heavy initial syllables. If variable-length vowels are shortened outside of the first foot, then, as proposed by Stonham, we would expect variable-length vowels to be shortened in *second* and later syllables in words with heavy initial syllables. However, examples like (*búu*).*daaks* 'I have four' show that this is not the case. The variable-length vowel in *-daak* 'have' is long, though it lies outside the initial foot.

Second, the Makah process of long vowel epenthesis is opaque to variable-length vowel length determination. In the following examples, an epenthetic vowel in the second syllable pushes a variable-length vowel into the third syllable, but the variable-length vowel is pronounced long as if it were in one of the first two syllables.

- (24) *siqiidaakal* 'she's cooking' (Makah)
 q^wišii?iiks 'to smoke' (cigarette, etc.)
 čustkuudaakš?aλits 'I just got some new ...'
 ʔučuudaakš?aλwaad 'he got married (I am told)'
 λušuučuu?al 'it's empty' (of container for liquid)
 (Jacobsen 1971:12)³

Again, this shows that the claim that variable-length vowels are long only when they occur inside the first foot cannot work for Makah. I have argued that the very reason why this epenthetic vowel is long is so that it can serve as the head of a good iamb — e.g. (*q^wi.šii*).*?iiks* — which means that the foot ends before the third syllable. I therefore believe that the behavior of variable-length vowels in Makah is no longer phonological, but a syllable-counting morphological process — though I will not attempt a detailed analysis here.

³ Jacobsen notes one exception to the observed opacity of long vowel epenthesis to vowel length determination: *čustuuk^wa?aa*p 'to buy a new one' (1971:12).

However, I do not propose to abandon the foot theory of vowel length determination. Rather, in the next section I will incorporate it into a proposed unified account of all of the foot phenomena we have seen so far.

5 The one-foot word

So far, I have discussed in detail several patterns of Southern Wakashan phonology: stress in Makah and Tseshah and alternations related to stress, both synchronic and diachronic vowel deletion patterns, and the variable-length vowel phenomenon. What these all have in common is that they seem to treat the first two syllables of the word as phonologically stronger than the rest of the word. In this section, now, I will pursue the idea that these patterns reflect a gradual development in the Southern Wakashan languages toward a word consisting of a single foot.

In both Makah and Tseshah, the stress is restricted to the first two syllables of the prosodic word. For both languages, I argued that a single foot is built over the first one or two syllables — an iamb in Makah and a trochee in Tseshah — though the evidence for the Tseshah trochee was much weaker than that for the Makah iamb.

The main generalization that came out of all the vowel deletion patterns that we looked at is that vowels in third and later syllables are more prone to deletion. The variable-length vowel phenomenon, regular throughout Southern Wakashan, then showed even more clearly the difference in phonological strength between the first two syllables and the rest of the word.

I believe that these patterns suggest the following story. As Jacobsen 1979a proposes, at some point in the Pre-Southern Wakashan period, vowel length became neutralized to short in third and later syllables of the prosodic word. Since this shortening happened so regularly from the third syllable on, it seems likely that the first foot was always exactly two syllables, as Stonham 1990 proposes for modern Tseshah.

However, while Wilson 1986 and Stonham 1990 assume the entire word to be footed, I think it more likely that only the first two syllables were footed. The sweeping reduction of third and later syllables does not create better feet, whether trochees or iambs. Rather, it seems like an effort to eliminate as much phonological material as possible. I therefore surmise that this reduction went unchecked because third and later syllables were extrametrical, with the result that their length had no consequences for prosodic structure. If we allow such extrametricality in our theory of prosody, as Hayes 1995 does, then we need not posit two kinds of feet for Tseshah, as Stonham does. Instead, we have only footed syllables and unfooted syllables.

The irrelevance of vowels after the second syllable to word prosody appears to continue in the modern Southern Wakashan languages, as we saw from the patterns of vowel reduction and deletion discussed earlier, which are almost entirely restricted to third and later syllables.

But interestingly, Makah appears to have developed a new foot that is unlike the old foot. As shown above, the new initial iambic foot in Makah

cannot be what determines the length of variable-length vowels. Nevertheless, it is interesting that Makah shows the traces of two independent initial foot patterns: the prehistoric initial foot that led to the development of variable-length vowels throughout Southern Wakashan, and the newer iambic foot observed in modern Makah. This may also be true for Tseshaht, if the alternative analysis of Tseshaht stress that I sketched above is correct.

At any rate, the patterns of vowel reduction and deletion attested across the Southern Wakashan languages seem to show that the reduction begun by the variable-length vowel development is continuing. If this reduction persists, we might expect an advanced stage where the entire prosodic word consists of only a single foot, with most suffixes and clitics surfacing merely as strings of consonants, as in *q^waḫḫtkduuk* ‘that’s why we would’.

Moreover, the one-foot word toward which Southern Wakashan is moving does lead us to wonder whether certain features of these languages, or of neighboring languages, have been conducive to this development. One possibility that comes immediately to mind is the prevalence of consonant clusters in the languages of the Northwest Coast. This would at least provide a solution to the desire to eliminate vowels, though perhaps not the impetus.

A feature of the Southern Wakashan languages themselves that might be conducive to the development of the one-foot word is the presence of extensive second-position clitic strings. Since the third and later syllables of many words consist solely of clitics (see example), and clitics are prone to extrametricality, this might encourage non-footing of third and later syllables.⁴

- (25)a. ʔu -ca -čiḷ -eeʔis=aḷ =qey =d (Makah)
 DEIC-go.to-PERF-FUT =TEMP=COND=1PL
 ‘when we were going to’
- b. q^waḫḫ =it =ik =duu=k
 because.of=PAST=REL=1PL =HAB
 ‘that’s why we would’
- c. wik-il =ica
 NEG-FUT=2PL.IND
 ‘you (PL) will not’

A last possibility that occurs to me is that the one-foot word may be a compromise between a binary foot and an unbounded foot — i.e. between a foot consisting of two moras or syllables, and a foot with an unspecified number of syllables. Kwakwala (formerly Kwakiutl), the southernmost of the Northern Wakashan languages, and formerly spoken in the northwest of Vancouver Island in territory adjacent to Nuuchahnulth territory, has been analyzed by Bach 1975 and Hayes 1995 as having a stress pattern characteristic of unbounded feet.

⁴ Key: COND: conditional mood, DEIC: deictic, FUT: future, HAB: habitual, IND: indicative, NEG: negation, PAST: past, PERF: perfective aspect, PL: plural, REL: relative mood, TEMP: temporal specifier, “-”: suffix boundary, “=”: clitic boundary.

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- (26) Kwakwala: stress the leftmost heavy syllable, otherwise the rightmost syllable. Syllables with long vowels and/or coda sonorants are heavy. (Bach 1975, Hayes 1995)

If the Southern Wakashan languages, for whatever reason, build only binary feet, but are pressured by contact with Kwakwala to have only one stress per word, then the development of a single binary foot per word might be a compromise between these two pressures.⁵

6 Conclusion

I have examined several phonological patterns indicating that the Southern Wakashan languages build only a single foot over the first one or two syllables of the prosodic word, leaving the rest of the word unfooted. These patterns included the restriction of stress to the first two syllables, the variable-length vowel phenomenon, and the relative vulnerability of vowels in third and later syllables to deletion, both historical and synchronic. I also discussed the possible history of this development, as well as some ideas regarding why it might have arisen. However, further comparisons of the stress systems and vowel deletion patterns of neighboring languages are needed in order to come to any conclusions about the origin of this phenomenon.

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⁵ Boas 1947 sometimes marks more than one stress in very long Kwakwala words, leading Wilson 1986 to analyze the language as building iterating feet. Bach 1975, Lincoln & Rath 1980, and Hayes 1995, however, assume only one stress per word for Kwakwala. See Bach 1975, endnote 4 for a discussion of this problem.

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