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CONTENTS

	<u>Page</u>
Choctaw Suppletive Verbs and Derivational Morphology Jeffrey Heath	1
Tonogenesis and the Kickapoo Tonal System Geoffrey Gathercole	25
Hindi-English, Code-switching and Language Choice in Urban Upper-middle-class Indian Families Sunita Malhotra	39
Meandering through the Name Maze Mona Hargadine	47
Decrements in Children's Responses to <u>Big</u> and <u>Tall</u> Virginia C. Mueller Gathercole	57
The Role of Gesture in Communication Development Mary Ann Ronski	77
Development of Turn-taking in a Young Child in Relationship to Pauses in the Mother's Speech Amy Finch	93
On the Motivation and Structure of a Strengthening Process in Tswana Ronald P. Schaefer	119

TONOGENESIS AND THE KICKAPOO TONAL SYSTEM

Geoffrey Gathercole

Abstract: Voorhis 1967 describes the suprasegmentals of pitch in Kickapoo as a system of "limited and unlimited intonations". The present paper seeks to identify the sentence-level pitch patterns, which correspond to what has usually been called "intonation", and to distinguish these from the predictable pitch phenomenon found in Kickapoo. The intonation patterns are found to closely resemble those found in another Central Algonquian language - Potawatomi. A possible origin of predictable low tone is investigated with a view to explaining it within the historical description of Central Algonquian and the generally accepted universals of the origin of tones.

The search for universals is one of the most interesting and profitable areas of linguistic research both for the value of such universals as characterizations of human language and for their predictive value in the reconstruction of other stages of a given language. Typological studies of various kinds lead to the positing of universals, and progress then consists of adding confirming data to the repertory available or of finding crucial exceptions to the hypothesized universal.

Several such universals are suggested by the many extant studies on the origin of tone in lexical tone languages. The purpose of this paper is to examine the fit between the tonal phenomena described for the Kickapoo language of the Algonquian family of North American Indian languages and the generalizations established for the origin of tonal phenomena.

The assumption that lexical tone is a reflex of an earlier segmental phenomenon is well established on the basis of work in Oriental (Chinese, Burmese, Vietnamese, and Thai, inter alia) and African (e.g. Hausa) languages. A comprehensive inventory of these tone producing phenomena can be found in Hombert, Ohala and Ewan 1979. They show that there are universal phonetic motivations for the development of low tone following voiced stops and breathy voiced stops, and of high tone following voiceless stops. Conversely, there is little or no evidence that a post-vocalic oral consonant has an appreciable effect on the pitch (and therefore tone) of the preceding vowel. However, there is ample evidence from several languages (Burmese, Lahu, Chinese, Kachari) that a post-vocalic glottal stop has produced a rising tone on the preceding vowel and that a post-vocalic glottal spirant /h/ has produced a falling tone on the preceding vowel (Chinese, Vietnamese). The development of carefully constructed phonetic explanations of the origin of these tonal phenomena further allows a contrary hypothesis to be formed, namely that certain phonetic environments cannot normally be productive of a given tonal phenomenon. Thus, Hombert, Ohala and Ewan write:

"We have reviewed what we consider to be promising phonetic

explanations for well-attested tonal sound patterns e.g. tone originating from the effects of prevocalic stop consonants or postvocalic glottal consonants, and tone rarely or never originating from the influence of postvocalic non-glottal consonants or from vowel height"

Having established this prediction, it is necessary to seek out exceptional data and to use the prediction to arrive at a plausible explanation. In the event this is impossible, we would be forced to revise the prediction. In other words, the prediction itself suggests possible analyses to be considered. Two cases in point are mentioned by Hombert, Ohala and Ewan.

"The occasional correlation between higher tone and original preceding voiced consonant...and the development of falling tone after loss of a postvocalic [ʔ], where a rising tone would be expected - as in a number of Chinese dialects (Cheng)...If the postvocalic [ʔ] implicated in the development of a falling tone was actually creaky voice at the time of the development, the falling tone would not be exceptional. Again, if the prevocalic [b] implicated in the origin of higher tone had changed to an implosive [ɓ] by the time of the tonal development this would no longer be an exceptional pattern either."

Clearly the danger of forcing the data to fit the hypothesis must be avoided, but if an explanation that fits the hypothesis is not specifically contradicted by available evidence or other more persuasive universals, then the data cannot be regarded as counterevidence to the universal hypothesized.

At this point, we set aside the discussion of the phonetic origin of tones to turn to the facts of Kickapoo. The only comprehensive descriptions of the Kickapoo language are those published by Paul Voorhis (1967, 1974). One phonetic text is available from the early part of this century (Jones and Michelson 1914), and this includes some commentary on the phonetic questions to be raised.

Following Voorhis 1967, the Kickapoo language exhibits four levels of phonemic tone.¹

higher high	/ [^] /
lower high	//
higher low	/ [^] /
lower low	/ ^v /

These tones combine into what Voorhis calls limited and unlimited intonations. The limited intonations are of two kinds. The sentence final intonation for declaratives consists of a lower high tone followed by two or three lower low tones /^v(^v)/. The other limited intonation consists of a high-low sequence /[^]/ and occurs early in a sentence, generally on the first word but never on the first syllable of the sentence. Interrogative, imperative, and emotional limited intonations also occur. The

unlimited intonations occur on all syllables not affected by one of the limited intonations and follow the simple rule that a syllable preceding a spirant is pronounced on a higher low tone /[˘]/ while any other syllable is pronounced on a lower high tone /^ˊ/.

The existence of these three distinct kinds of "intonation" phenomena in Kickapoo is especially interesting in light of the fact that other quite closely related Algonquian languages (Ojibwe, Cree, Potawatomi, Menominee, etc.) do not apparently exhibit the same array of tone phenomena. Specifically, the unlimited intonation /[˘]/ does not appear in the descriptions of Central Algonquian languages. In principle, it seems desirable to discover the motivation of such phenomena that are apparently not inherited in the language.

I do not intend to take issue with the description of tones presented by Voorhis. I do, however, propose that only the sentence final limited intonations correspond to what is generally called intonation in linguistic work, that is, a sentence level tonal phenomenon which is capable of supplying additional meanings, such as interrogation, emphasis, etc., to the segmental sequence, according as one pattern is chosen over another. On the other hand, the so-called unlimited intonations, whereby low tone /[˘]/ is found on any syllable preceding a fricative, unless a sentence level intonation prevents it, is predictable in occurrence and therefore not phonemic. The status of the limited intonation /^ˊ/ will be discussed at greater length, but here we merely note that it is entirely optional and may not occur at all in a quite lengthy utterance. To summarize then, Kickapoo has sentence final intonations which are unproblematic, entirely predictable low tone /[˘]/ preceding spirants serving no syntactic function, and an optional high-low /^ˊ/ sequence which is not predictable and apparently does not contribute to the meaning of the sentence.

The first of these seems to require no further comment. Final falling intonation for declaratives and final high tone for interrogatives, emphatics and imperatives are so common in the world's languages that we hardly need to seek motivation for them here.

The occurrence of low tone before spirants is more interesting and requires closer examination in the light of universals of phonetic motivation for tones.

But first, let us look a little closer at the sentence medial high-low /^ˊ/ in order to see if it can be explained within the predictable tone system or the sentence level intonation system.

The following examples are drawn from the texts given in Voorhis 1967 (pp.207 ff.). The occurrences of high-low /^ˊ/ (i.e. low tones not predicted by the pre-spirant low tone rule) are underlined. I have followed Voorhis' convention by marking the tones only on the first vowel of a series of syllables pronounced on the same pitch. Thus, vowels not carrying a pitch mark have the same pitch as the most recent marked vowel.

- | | |
|--|---|
| 1. záakicìi nóki netàsíãcaao | 'I cooked outdoors today' |
| 2. tákwàháani nēwãcaao pèsékìzìwiãazi | 'I cooked hominy & deer
meat' |
| 3. pjéetapeneakì áapipakaanehkãaciki | 'Those who had been gathering pecans arrived
hungry' |
| 4. táanãhka héà néenaĩhtoa | 'Where did Neenaihtoa go?' |
| 5. píinkèehéki kiakì kíikaatenĩhkea | 'He's still picking cotton in Binger' |
| 6. máaneeteniani pì pákãanani | 'There are a lot of pecans, it is said' |
| 7. áikàazoohákaanekì kiihisíenaakì koosízëmaki | 'Take your grandchildren to the movie theater' |
| 8. sèeskí nekiisìpítikanãaki | 'I just took them inside' |
| 9. káata nìin ápwihĩhkeekô n èehínãki | 'Don't wait for me, I told her' |
| 10. nìiháwanekookìi níki maanìzaki pénõaane | 'Those white people will take me home' |
| 11. óo neenaĩhtoa népanaaciãapena | 'Oh, we lost Neenaihtoa' |
| 12. téepi càahí nēkaskihtóopena nekotwãasíka tazóomehkwe | 'We managed to earn enough though - six dollars' |
| 13. téepi nēmánopena ìihmícíãaake | 'We had enough to buy what we'll eat' |
| 14. máamajà níihpjãapena íãki | 'We'll come early, they said' |
| 15. sé càah kíãkí àskípakjãani | 'But they're still green' |

It is immediately apparent that there is no phonetic environment which would allow the prediction of the high low /' / tone sequence. Voorhis states that

"When /' / occurs in construction with a word of less than three syllables, the intonation begins on the syllable following the initial syllable of the word. Therefore, a disyllabic word in construction with /' / has /' / on its final syllable, while /' / occurs on the initial syllable of the following word" (p.22).

This is to explain sentences like #s 9, 12, and 13. He continues:

"and /' / in construction with a monosyllabic word occurs wholly on the first two syllables of the following word"(p.22).

This explains # 15. However, #s 4 and 6 and perhaps 9 violate these rules. Voorhis himself is apparently uncomfortable with these rules for the distribution of /' / since he states

"Further normalizations are suggested by the seemingly random occurrence of elision and sentence medial /' /, but such normalizations have not been undertaken lest some significant distinction or some conditioned distribution be concealed"(p.206).

It is my suggestion that Voorhis' puzzlement is a result of his desire to predict the occurrence of this intonation on the basis of word position and number of syllables. If we look back at the texts from earlier in the century, we find one (Jones 1907 "Fox Texts") which may be relevant to this question. The question of the use of Fox data for discussions of Kickapoo is taken up later, but suffice it to say at this point that there are good precedents for so doing. In the introduction to the texts, Jones states

"The matter of stress can be indicated in a general way. As a rule, in words of two syllables the accent falls on the first; in words of three syllables, the accent falls on the antepenult; and in words of more than three syllables, there is generally a principal stress on the first or second syllables and a falling secondary stress on the penult. In many instances stress is contrary to what is here stated, and in such cases it is generally indicated by the acute accent!"

An inspection of the texts reveals that Jones did not mean that every word has stress in sentence combinations, but rather that what is being described here is sentence final stress. The following examples represent some cases where Jones has marked the accents:

p.8 1.12 tcAtcāwi'¹ négut¹, tcAtcawī¹ nīcw¹ ä·A·skwinesāt¹

'Sometimes one, sometimes two he saved from killing'

p.10 1.12 Ä·a·'täni¹ mé'tegw¹ ä'pepigwāyāni¹ ä'tAcika'kinegut¹

'There was a log that was hollow and there she was hidden'

p.12 1.2 I'na ätAcimAtAnet¹ 'There they were overtaken'

p.12 1.5 äyāne'kī·ā·pe ai'yāpAm ä'pyāwāt¹cin¹ 'Fewer grew their

number every time they came home'

p.12 1.6 Kä'geyā'¹ pacitōhAg ä'tcāgihetc¹ 'In the end all the
old men were slain'

It is to be noted that in each case the accent is written on the syllable which would carry the stress according to the rule described by Jones. But Jones said that accents were marked for exceptional cases; so we can conclude that the stress rule as stated applies on the sentence level and that these are exceptional because they are not sentence final.

Now, what do the accented forms in Jones 1907 have in common with the /' / forms listed before from Voorhis 1967? In Gathercole 1978, I described how in Potawatomi the intonation pattern reflected the syntactic optionality of explicit subject nominals, object nominals, etc., by permitting phrase final falling intonation on these elements. This has the effect of placing such elements in an appositive relation to the implicit elements in the verb phrase. The examples from Fox above fit into a similar pattern. While Potawatomi is quite distantly related to Kickapoo, Fox is very closely related (Gathercole 1980) and the behavior of stress in Fox is suggestive of a solution to the /' / problem in Kickapoo. Nearly all instances of /' / are compatible with a phrase final intonation analysis, but one or two comments are in order. Some examples of /' / are across word boundaries, but in only one case does the low tone fall other than at a morpheme boundary (#15). This suggests merely that the word divisions are more flexible for this purpose than is suggested by our orthographic practice.

The fact that a sentence may have more than one of these /' / sequences seemed to be a cause of concern to Voorhis. Multiple occurrences of this pattern are perfectly compatible with a phrase final intonation analysis, and can be expected to disappear and reappear according to the tempo of the discourse, explaining why both Voorhis and Jones show minimal contrasts involving this phenomenon in their texts. (Voorhis discusses the effect of casual style on the segmental and morphological level but is silent on the suprasegmental question).

The existence of this phrasing phenomenon is scarcely contestable in examples #s 2, 9, and 14, all of which violate Voorhis' sentence final intonation rule as it is stated. It is also the only explanation that will account for #s 10 and 11 without requiring a new set of rules, since both contain sequences of low pitch not predicted by Voorhis' rules.

In summary, though I do not regard the point as proven, I feel comfortable in assigning sentence medial /' / to the repertory of sentence intonations such that the low tone originates from the contrast between the accented syllable and its following syllable. (In fact, in his later work (Voorhis 1974), Voorhis describes these intonations in terms of accents, thus suggesting that there may be a contrast between connective /' / and the /' / found before low tones in intonations. Such an analysis would look even more like the stress system of Fox than the present scheme.)

If /' / is an intonation phenomenon, then it creates no problem for a discussion of the origin of predictable tone in Kickapoo. We are left then with the interesting problem of the pre-spirant low tone.

Recall that any syllable preceding a spirant which is not otherwise subject to one of the limited intonations is pronounced with a low pitch. All other syllables are pronounced on a high pitch /'. The consonant phonemes of Kickapoo as given by Voorhis are:

p	t	c [č]	k
	z [θ]	s	h
m	n		

Low tone occurs then on any syllable which precedes [θ],[s] or [h]. Returning to the original discussion of the phonetic origins of low tone, we find that the development of low tone on a syllable preceding [h] is well-attested in several languages. But what of low tone before non-glottals? Of this there is no evidence in the literature. Oral fricatives are acoustically composed of high frequency noise, though there is not even any evidence that fricatives can raise the tone of a preceding vowel. We are led to apply the reasoning mentioned above, whereby any explanation that will fit the facts and is not contradicted by available evidence will be preferable to an expansion of the theory. In this case, if we can find a plausible source for the low tone before oral fricatives, it will be preferable to expanding the repertory of low-tone producing environments in the world's languages.

Now, on historical principles, the modern Kickapoo consonant system looks like this:

p	t	č	k
hp	ht	hč	hk
	θ	s	h
m	n		

Low tone is found not only before fricatives proper but also before the preaspirated stops. This fact is suggestive of a possible origin for low tone before oral fricatives. If there is a series of preaspirated fricatives to parallel the series of preaspirated stops, we could expect low tone to have originated there.

From comparative evidence, we know that the preaspirated stops are modern reflexes of older clusters. Likewise, we know that there were fricative clusters in an earlier stage of the language. The proto-Algonquian consonants and consonant clusters as reconstructed by Bloomfield 1946, with their reflexes in modern Menominee and Kickapoo, are as follows:

<u>Proto-A</u>	<u>Menominee</u>	<u>Kickapoo</u>
p	p	p
t	t	t
k	k	k
č	č	č
s	s	θ
š	s	s
θ/l	n	n
mp	hp	p
xp	hp	hp
šp	sp	hp
nt	ht	t
ht	ht	ht
?t	?t	ht
nk	hk	k
hk	hk	hk
xk	hk	hk
θk	hk	hk
sk	hk	sk
čk	čk	hk
šk	sk	sk
nč	hč	č
hč	hč	hč
?č	?č	hč
ns	hs	θ
hs	hs	θ
?s	?s	θ
nš	hs	s
hš	hs	s
?š	?s	s
nθ	hn	-
hθ	hn	θ
?θ	?n	θ
nl	hn	n
hl	hn	θ
?l	?n	θ

There are several areas of difference between Menominee and Kickapoo in this table, but one fact is plain. There are two totally distinct sources for the series of fricatives in Kickapoo and there may very well have been a long period of time during which the second series was preaspirated just as the Menominee series is still. Now, since some occurrences of /θ/ and /s/ are reflexes of proto single segments, while others are reflexes of proto clusters, we might not be surprised to find two series of fricatives distinguished in the modern language, especially since many

other closely related languages retain the two fricative series in one guise or another. Two additional facts lead to this speculation. The first is the existence of many pre-spirant syllables in Voorhis' texts that do not exhibit low tone, and the second is the existence of apparently fortis and lenis pronunciations of the oral fricatives in Voorhis' recordings and in my own.

Of the first of these facts, we have several examples in the data above from Voorhis' texts, specifically #s 3, 7, 8, 9, 11, 12, and 14. However, in each case there are good reasons for regarding these syllables as carrying sentence stress, notably that they are all followed immediately by the low tone of the sentence intonation pattern. In other words, the sentence final pattern overrides the pre-spirant low tone rule.

As for the second, Voorhis notes that there are voiced (or lenis) variants of the spirants /θ/ and /s/. He claims that this voicing is sporadic. However, my own recordings of Katherine Wahpepah, a Kickapoo speaker living in McCloud, Oklahoma, where much of Voorhis' data was gathered, show relatively automatic voicing of some spirants in some words. Before we dismiss any phonetic feature of a language as sporadic, we would want to exhaust a number of possible systematic explanations, and two such explanations offer themselves as possibilities. The first is that the lenis fricatives correspond to proto fricatives while the fortis or unvoiced fricatives correspond to proto clusters; the second, that there is some synchronic voicing environment. (It may well be that Voorhis has entertained both of these hypotheses; unfortunately he provides little discussion of such things.)

In an attempt to determine the validity of the first of these, I extracted 130 words containing these fricatives from my recorded data. I then divided these according to my perception into fortis and lenis groups and only then confronted the lists with the reconstructions of proto-Algonquian given in Aubin 1975. Forty three items were located in the Aubin dictionary and compared to the lists but the hypothesized correspondence was not obtained. The lists are given in the appendix.

We observe that phonetic [z] corresponds to *š, though there are many *š that do not give [z]. Surprisingly, every occurrence of [š] corresponds to a proto cluster. This runs directly contrary to our prediction, and might be interesting were it not for the many instances of proto clusters that give the voiceless allophone. All this leads us to the conclusion that there is no traceable relation between the variants and the division of fricatives and clusters in the proto language.

An inspection of the synchronic environments for voicing reveals some regularity, but again the evidence is far from conclusive. All the voiced [z] follow stress; however, many voiceless [s] also occur in this environment. The voiced [š] are all adjacent to stressed syllables or associated with /w/ - but again /w/ is not sufficient condition for voicing. All of the [z] follow a long syllable provided that another long syllable does not follow (the only exception to the converse in the data being /wiisiki/ 'strong').

Whatever the environment turns out to be, if indeed the variation is not sporadic, it apparently does not correspond to the proto distinction that is of most interest to us here. Furthermore, voicing of spirants is apparently a recent innovation in Kickapoo, since in the

introduction to Jones and Michelson 1914, Michelson states:

"It should be carefully noted that z is not a sonant; it is a surd spirant articulated with the tongue on the upper teeth..."

Since there is apparently no evidence in the modern language that can help us explain the origin of low tone before spirants, we turn to the earlier records in the hope of finding a stage closer to the collapse of the fricatives and fricative clusters into a single series.

No mention is made of either stress or tones in Jones and Michelson 1914, though there is only one fricative series.

An impasse has been reached at this stage unless we permit ourselves to go a little further afield, to the Fox language. Persistent references to the similarity of Kickapoo and Fox in the abundant literature on the latter seem to lend justification to this step. To quote from one or two:-

Maximilian in 1832-4 (Thwaites 1906) writes:

"These (Kickapoo) Indians speak the same language as the Saukis and Foxes."

Mooney and Jones 1907 write:

"(Kickapoo) A tribe of the central Algonquian group, forming a division with the Sauk and Foxes, with whom they have close ethnic and linguistic connection."

Jones 1911 specifies that:

"Sauk and Fox are the same speech with feeble differences of intonation and idiom. Kickapoo is closely akin to both, but is a little way removed from them by slight differences of vocabulary, intonation and idiom."

In addition, a comparison of the phonetic systems used by Jones for Fox (Jones 1907) and for Kickapoo (Jones and Michelson 1914) (Michelson merely translated and published the tales, leaving Jones' transcriptions intact) reveals that the segmental systems are identical for the two languages. (For further discussion of the detailed comparison of Fox and Kickapoo see Gathercole 1980.)

Now, Michelson 1917 takes issue with Jones' transcription of Fox on one highly significant detail.

"I do not consider Jones' phonetic scheme adequate for the Fox dialect. Our chief points of difference are: that I hear aspirations before all initial vowels and diphthongs, after all terminal voiceless vowels, and after all vowels when followed by sibilants..!"[emphasis mine]

Moreover, Michelson 1921 consistently marks the aspiration before all occurrences of sibilants. Lest we should be in a quandary about which investigator to trust on the matter of phonetic accuracy, Bloomfield 1922

provides the following testimonial. With specific reference to the phonetic transcriptions of Fox in Michelson 1921, Bloomfield testifies:

"It is safe to presume that Michelson's phonetics are impeccable."(p.96.)

We can now deduce that the contrast between fricatives and fricative clusters collapsed in favor of the preaspirated fricatives for Fox at some stage and is attested at least as late as Michelson's 1921 fieldwork. According to Voorhis 1971, "the combinations /hs/ and /hš/ are replaced by /s/ and /š/ respectively" in data gathered in 1968.

We can at least hypothesize, noting that at present there are no conflicting data, that Kickapoo also generalized aspiration before the fricatives at some stage prior to the acquisition of low tone before /h/, thus leaving low tone before all fricatives when the aspiration was subsequently lost. Synchronic confirmation of the loss of /h/ before spirants in Kickapoo is found in Voorhis 1967 where he notes (p.27) that /h/ is omitted before a spirant at morpheme boundary.

Assuming that low tone originated with aspiration, this solution competes with a hypothesis that low tone originated before the reflexes of the proto fricative clusters and then generalized to the other fricatives either before or concurrently with the collapse of the two series. The first of these solutions seems infinitely preferable since it implies no generalization of low tone to an environment that would not of itself generate low tone, and in addition has the advantage that there is an attested intermediate stage in a very closely related language. The remaining puzzle is why Fox did not also develop low tone before /h/, and the answer remains one of the mysteries of human language. We have salvaged the universals of tonogenesis for the Kickapoo case, but universals are explanatory and not predictive.

Footnotes

1. The diacritics are those used by Voorhis. The values are those given even though they are not the values used elsewhere in linguistic literature. Note that moving tones are represented by arrows in Voorhis, while these diacritics represent levels of tone.

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Appendix

	<u>Wahpepah</u>	<u>Aubin</u>	<u>Entry #</u>	<u>Gloss</u>
[s]	askotei	*eṣ̌kote·wi	355	fire
	neme <u>so</u> owa	*-mehṣ̌o·mehsali	2178	grandfather
	nesi <u>θ</u> æa	*neṣ̌ihsa	1518	uncle
	nes <u>e</u> miha	*neʔθem-	1501	niece
	isk <u>w</u> æa	*eθkwe·wa *iḡkwe·wa	403 490	woman
	wiisika <u>θ</u> enwi	*kawa·hθenwi	635	blow hard
	kətəwaas <u>i</u> kə	*nekotwa·ṣ̌ika	1418	six
	nəs <u>w</u> aasikə	*neʔṣ̌wa·ṣ̌ika	1492	eight
	pes <u>i</u> a	*peṣ̌iwa	1859	cat (*lynx)
	nekotikase <u>a</u>	*meṣ̌kaṣ̌ya	1253	horse (*nail)
	siis <u>i</u> ipəha	*ṣ̌i·ʔṣ̌i·pa	1993	duck
	s <u>e</u> kaakwə	*ṣ̌eka·kwa	1978	skunk
	pes <u>e</u> kiθia	*peṣ̌ehkiwa	1858	deer (*buffalo)
	miis <u>i</u> kwaah	*mi·ʔṣ̌i	1308	buffalo (*hairy)
	ask <u>i</u> ihki	*axki	226	ground
[z]	neski <u>z</u> ekwi	*neṣ̌ki·nṣ̌ekwi	1522	eye
	kək <u>i</u> zæ·p	*kekiṣ̌ye·pa	688	morning
	ni <u>z</u> ʷ	*ni·ṣ̌wi	1630	two
	ki <u>z</u> eðwa	*ki·ṣ̌ehswa	922	sun
	ki <u>z</u> ekwə	*ki·ṣ̌ek	934	sky
	noo <u>z</u> iðemaak	*no·hṣ̌ihsema	1643	grandchildren

[θ]	neθwi	*ne?θwi	1503	three
	netathwipoonwe	*tahθ-	2015	I'm x years old (* so many)
	neθete	*ne?θ-	1497	kill (T.A.)
	memeεθək ^h	*name·?sa	1379	fish
	æθεpaana	*e·hsepana	247	raccoon
	nookoomεθ	*no·hkomehsa	1640	grandmother
	nooθa	*no·hθa	1644	father
	neθekwiθ	*nesekwihsa	1505	aunt
	nekwiθ	*nekwi?sa	1422	son
	netaanεθ	*neta·nehsa	1526	daughter
	neθεθæha	*ne?θ	1496	older brother
	nemiθæha	*nemihse·ha	1438	older sister
	nemičaaaneθa	*neni·čya·nehsa	1450	child
	kwiæθæa	*kwi·weHsa	1132	boy
	meθihkwi	*me?θ	1236	it's hailing (* big)
[ð]	metaað	*meta·tahθwi	1260	ten
	kiizeðwa	*ki·se?θwa	923	sun
	miiðeðia	*mi·?ši	1308	sheep (* furry)
	wiaaði	*wi·yawehsi	2264	meat
	owiiðeni	*wi·?θeniwa	2251	eat
	noosiðemaak	*no·hšihsema	1643	grandchildren
	wiisikaaðenwi	*kawa·hθenwi	635	'the wind's blowing hard' (*It's blown down)