Tone Specification and the Tone-Bearing Unit (TBU) in Hän Athabascan

Jonathan Manker
University of California, Berkeley
WSCLA 19, St. John’s, Newfoundland
April 25, 2014
Introduction – Privativity

• Some phonological features have been described as privative or univalent, where only one value of the feature must be specified. In these cases only the presence of a feature is active in the phonology, while its absence is the default setting (for example rounding, nasality) (Trubetzkoy 1939, Steriade 2005).

• Equipollent or bivalent features must be specified on every eligible segment or syllable as either + or -, and both values of the feature are in some way active in the phonology.
Privative Tone in Athabascan Languages

- Tone in many Athabascan languages is often described as being privative (Rice & Hargus 2005).
- Only the marked or specified tone is active in the language’s phonology. The contrasting pitch is assigned by default to non-specified syllables at the surface level.
- This is due to the historical origin of tone in Athabascan, which developed from glottal constriction (Krauss 1979, Kingston 1985, Leer 1999). Some Athabascan languages developed low tone from constriction, while some developed high tone.
Tone in Hän

- Hän is a tonal Athabascan language of eastern Alaska.
- Hän is low-marked, meaning low tone developed from glottal constriction, where high pitch occurs on historically non-constricted syllables.
- In addition to two level tones, Hän, like some of its neighbors, developed contour tones whereby two tone differing tones have become attached to a single syllable.
The development of contour tones potentially indicates a phonological activation of the unmarked tone. Due to the development and patterning of contour tones in Tanacross, Holton (2002) has analyzed it has now having equipollent tone.

Thus, this study will answer two questions:

1) Now that two tones can be attached to a single syllable, is the tone-bearing unit (TBU) the syllable or the mora?

2) Is tone in Hän privative or equipollent? Understanding the nature of the TBU will help answer this question.
• Following the model of Pulleyblank (1986) and Hyman & Katamba (2010), the study considers the specification of tones at three different morphological levels: stem, lexical, and post-lexical.

• Data will be examined from two dialects of Hän, which only differ slightly in tonal patterns, but this causes a different interpretation of tonal specification.
Characteristics of Privative Tone Systems

• Hyman (2001) describes several characteristics of typical privative tone systems.

• 1) *Contour tones composed of tone sequences, such as ØL (phonetically HL or falling) or LØ (phonetically LH or rising) cannot be attached to a single tone bearing unit.*

\[ (a) \quad (b) \quad (c) \]
• 2) The specified or marked tone can be a floating tone, while the unspecified tone cannot.

• 3) OCP (Obligatory Contour Principle) violations will only be sensitive to the marked or specified tone.

• 4) Tone spread will only occur with the marked or specified tone.
Characteristics of Moraic vs. Syllabic TBUs

• Tonal melody application--- a good way to determine the TBU but does not occur in Hän
• Yip (2002): If a language has both mono-moraic and bi-moraic syllables and only one tone may attach to mono-moraic syllables and two may attach to bi-moraic syllables, then the mora is the TBU. If two tones can link to syllables of different weights, then the syllable must be the TBU.
• Tone spread--- from syllable to syllable or mora to mora?
Tonal Patterns at the Stem Level

• In Eagle Hän, contour tones only occur on syllables with two voiced sonorant segments in their rimes. Thus, contour tones only occur on CVV and CVR syllables, but not on CV or CVO.

• Examples: /ǰəʃũ:/ ‘moose’ /ts’ō/: ‘spruce’
  /-tsěy/ ‘grandfather’ /ləsēw/ ‘salt’
  /ǰǒr/ ‘Canada jay’ /dǎn/ ‘four’
  /lɔ/ ‘really’

• Unattested: */dält/, */dǎ/, */dǎw/
• This obeys Gordon’s (2004) implicational heirarchy: CVV > CVR | CVO > CV. CVV and CVR are then considered bimoraic and CVO and CV are monomoraic.

• The TBU in Eagle Hän thus appears to be the mora at the stem level.

• Because the mora is the TBU, this potentially allows for a privative analysis of tone in Eagle Hän at the stem level.
Because there is no phonological activation of H tones at the stem level, by default Eagle Hän displays a L vs. Ø (privative) tonal contrast. Different tone possibilities on bimoraic stem syllables can thus be represented as below:
Dawson Hän Stem-Level Contour Tones

- Dawson Hän, on the other hand, does not have the same moraic requirement for contour tones at the stem level. A contour tone can occur underlyingly on a syllable with only a single mora:
  - /ts’ǒk/ ‘spruce tree’ /tsǔk/ ‘marten’
  - /jəjik/ ‘moose’ /àhʔǎ:/ ‘outside’
• However, surface realization of these contour tones suggests that the mora, rather than the syllable, is still the TBU. On a monomoraic stem with a contour tone, only one of the two tones may ever surface. If the following tone is high, the low surfaces; If the following tone is low, the high surfaces (known as a polar tone).

(1a) [ts’òk chó: hè: yèhtsáy]  (1b) [ts’ók hè: yèhtsáy]
spruce big with made.3s spruce with made.3s
‘He made it with a big spruce.’ ‘He made it with a spruce.’
(Ritter, p.c.) (Ritter, p.c.)
• This suggests that the second tone of the contour, a H in the case of a rising tone, has no tone-bearing unit and is floating, so these examples are better represented as /ts’òk´/ and /ǰəǰik´/.

• Since a Ø tone (absence of a tone) cannot attach to a single mora already specified for another tone, and a Ø could not attach to a Ø segment, we must conclude that at least some of Dawson Hän’s H tones are specified at the stem level.
Tone Specification at the Lexical Level

• The patterning of tone in the formation of possessed nouns can provide insight to the specification of tones at the lexical level.

• In Eagle Hän, possessed noun stems are usually formed by adding a [+voi] feature to the coda along with a low tone (with an optional glottal stop). The result is that the possessed stem usually has low tone (a few exceptions have high tone, but never a contour tone).

<table>
<thead>
<tr>
<th>(Eagle) Hän</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>unpossessed</td>
<td>possessed</td>
</tr>
<tr>
<td>xáwò ‘sled’</td>
<td>-ŋàw(ʔ)</td>
</tr>
<tr>
<td>č’ó: ‘quill’</td>
<td>-č’ò:(ʔ)</td>
</tr>
<tr>
<td>trát ‘firewood’</td>
<td>-tr’ò:(ʔ)</td>
</tr>
<tr>
<td>tθ’æk ‘dish’</td>
<td>-tθ’æw(ʔ)</td>
</tr>
<tr>
<td>t’èrò ‘charcoal’</td>
<td>-t’èr(ʔ)</td>
</tr>
</tbody>
</table>
In Dawson Hän, a voicing feature is not usually added to the coda, but a low tone is still added.

<table>
<thead>
<tr>
<th>Dawson</th>
<th>Eagle</th>
</tr>
</thead>
<tbody>
<tr>
<td>-dzàk ‘ear’</td>
<td>-dzày</td>
</tr>
<tr>
<td>-ǰàk ‘eye’</td>
<td>-ǰàw</td>
</tr>
</tbody>
</table>

• In all these examples, L tone is exerting dominance over any H tone that may occur on the unpossessed stem, suggesting privativity once again--- It is as if there is no H tone at all.
However, following the same analysis as was proposed for the stem level is problematic, since contour tones are allowed on bi-moraic stems. In Eagle Hän, the contour tone often introduces an extra mora along with the low tone. It should therefore be no problem for a contour tone to be created if the mora is the TBU. 

\[(æh \text{ ‘snowshoe’} + [+\text{voi L}] \rightarrow *æː \text{ ‘snowshoe’ (possessed)}\]

This could be explained if a tone may only attach at the syllable level during lexical derivation. Contour tones would then be restricted from occurring since both \(L\) and \(Ø\) could not be attached to the same tone bearing unit.
Incorrect moraic TBU possessed form

* /ʂə/ ‘my’ + /ʔæh/ ‘snowshoe’ + [voi] --> /ʂəʔæ:/ 'my snowshoe'

Correct syllabic TBU possessed form

/ʂə/ ‘my’ + /ʔæh/ ‘snowshoe’ + [voi] --> /ʂəʔæ:/ 'my snowshoe'

Stem level contour tones are still protected in this analysis because no tones attach at the syllable level to override the moraically attached tones.
Post-lexical Tonal Specification

- Both dialects of Hän display a system of tone spreading that is characteristic of a typical privative tone system. Marked L tone spreads right to the next tone bearing unit, showing complete dominance, and thus phonological inactiveness of H tone.

- Tone spreads from both stem and prefix syllables to stem and prefix syllables, though prefixes may not spread L tone to a stem syllable.
2a) čae: lay nóh?í:
boy dog sees.3s
‘The boy sees the dog.’

2b) žür lay nóh?í:
wolf dog sees.3s
‘The wolf sees the dog.’

2c) lay žür nòh?í:
dog wolf sees.3s
‘The dog sees the wolf.’

2d) Nínæ': húk'ânòhčæ':
our-mother looks after them.3s
‘Our mother is looking after them.’

2e) lay hònli:
dog there is.3s
‘There is a dog.’

- No low tones
- Stem to stem spread
- Stem to prefix spread
- Prefix to prefix spread
- No prefix to stem spread
L tone also demonstrates an OCP effect (one of Hyman’s (2001) characteristics of privative tone. L tone is blocked from spreading if another L occurs two syllables away.

3a) čæː  ših  èʔæw
boy  food  eat.3s
‘The boy is eating food.’

3b) *čæː  ših  èʔæw
boy  food  eat.3s
‘The boy is eating food.’
TBU at the Postlexical Level

• The TBU unit at the postlexical level seems to be the syllable, which is clearly demonstrated in most cases.
• When L tone spreads onto a bimoraic syllable, it results in a low-tone syllable and not a rising tone, suggesting it attaches at the syllable level.

(4a) źuŋ ɿąy ɿóhʔí:
    wolf  dog  sees.3s
    ‘The wolf sees the dog.’

(4b) *źuŋ ɿąy ɿóhʔí:
    wolf  dog  sees.3s
    ‘The wolf sees the dog.’
• However, the surface realization of contour tones follows a slightly different pattern of tone spread. These tones attach at the stem level (underlyingly) at which point the TBU is the mora.

• L tone within a contour tone also displays a motivation to spread rightward, in this case to the next mora. This spread is likewise blocked by the same OCP effect that blocks other tone spread, such that a LH sequence is realized as L before a H (Ø), and as LH before a L.
Eagle Hän, /ŋəjũː:/

(5a)  jajũ: nēkʔi:
   moose see.1s
   ‘I see the moose.’

(5b)  jajũ: k’ēt nēkʔi:
   moose tracks see.1s
   ‘I see moose tracks.’

Dawson Hän, /əhʔãː:/

(6a)  âhʔã: səːː niʔæː:
   outside sun shine.3s
   ‘It is sunny.’

(6b)  âhʔã: dâhōnč’ē:
   outside how
   How is it outside?

L(H) (H) > L   H   (L spreads)
L(H)   L   >   L(H)   L   (L is blocked from spreading)
• Despite the characteristic patterns of privativity displayed at the post-lexical level, there is some evidence that contour tones may be specified as HL and LH (rather than ØL and LØ) in Eagle Hän as well.

• First of all, the TBU at the post-lexical level seems to be the syllable, and since contour tones exist this might suggest equipollence; However I suggest that because contour tones are underlying they are still are attached to the mora.
• Secondly, Krauss (1982) describes contour tone in Eagle Hän surfacing as also being dependent on the tone of the previous syllable. A rising tone could only emerge if previous syllable is H and the following syllable is L; /jɔr/:  
  • Jí jɔr chèzhàa. ‘This camp robber left.’  
  • Jì jɔr chèzhàa. ‘What camp robber left?’  
  • Jí jòn dhóhts’ík. ‘This camp robber is sick.’  
  • Jì jòn dhóhts’ík. ‘What camp robber is sick?’
• Typically marked tones display dominance over Ø tones such that marked tones do not usually delete in favor of a Ø. H > L in these cases suggests some phonological activeness of H tone in contours.

• Furthermore, there seems to be a constraint requiring that syllables be attached to a tone which drives the spread of L tone. No where else does L delete (two adjacent L L tones are fine if they are underlying). This suggests that L may only delete these contour tone examples because a H tone is specified at the post-lexical level in Eagle Hän.
# Overview of Tonal Specification

<table>
<thead>
<tr>
<th>Derivational Level</th>
<th>Eagle Hän</th>
<th></th>
<th>Dawson Hän</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem</td>
<td>Tone</td>
<td>TBU</td>
<td>Tone</td>
<td>TBU</td>
</tr>
<tr>
<td></td>
<td>L vs. Ø</td>
<td>mora</td>
<td>L vs. HL vs. LH vs. Ø</td>
<td>mora</td>
</tr>
<tr>
<td></td>
<td>(privative)</td>
<td></td>
<td>(equipollent)</td>
<td></td>
</tr>
<tr>
<td>Lexical</td>
<td>L vs. Ø</td>
<td>syllable</td>
<td>L vs. HL vs. LH vs. Ø</td>
<td>syllable</td>
</tr>
<tr>
<td></td>
<td>(privative)</td>
<td></td>
<td>(equipollent)</td>
<td></td>
</tr>
<tr>
<td>Postlexical</td>
<td>L vs. Ø (vs. HL vs. LH ?)</td>
<td>syllable</td>
<td>L vs. HL vs. LH vs. Ø</td>
<td>syllable</td>
</tr>
<tr>
<td></td>
<td>(equipollent)</td>
<td></td>
<td>(equipollent)</td>
<td></td>
</tr>
</tbody>
</table>

Privativity and the TBU in each language at different derivational levels
• Tonal patterns in Dawson and Eagle Hän suggest the same TBUs at every level of the derivation.

• However, the two dialects differ in the specification of tones. Because of the underlying floating tones that occur in Dawson, H tone at least in some contour tones must be specified. Presumably these tones cannot be un-specified at a later stage in the derivation.

• In Eagle Hän, a privative analysis may be maintained throughout. However, variation noted in Krauss (1982) suggests H tone in contours may be specified at the post-lexical level in some situations.
Analysis

• Eagle and Dawson Hän differ only minimally in their tone patterns but structurally a different analysis must occur.

• Rather minor diachronic developments that distinguish the two dialects which are only indirectly related to tone resulted in more profound differences in the system of tonal specification.

• E.g., *dəndiɡə > Eagle Hän /jəjùu/ and Dawson Hän /jəjı́kØ/
• This suggests unrelated diachronic processes are blind to tonal structure and proceed despite how they might affect tone specification or the nature of the TBU.

• In some cases multiple analyses can exist---when one tone seems to be inactive and unspecified, lack of evidence for its specification doesn’t necessary mean it is not specified (that is to say, a H vs. L analysis with L dominance over H would yield similar results, despite the H not being needed).

• This ambiguity may also lend itself to the tonal specification needed for new developments to occur (once H is specified at some level in the derivation, it may allow for a rule such as that occurring in post-lexical tone spread where L may sometimes delete).
Conclusions

• The two dialects of Hän display characteristics of both tonal equipollence and privativity, as well as moraic and syllabic TBUs.

• A stratal analysis was effective in distinguishing the tonal processes occurring at different levels in the derivation, and these suggested different analyses for tonal specification and the TBU in these different strata.

• This may also provide insight to the diachronic development of equipollent tone from an originally privative tone system.
References


