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NEZ PERCE VOWEL HARMONY AND PROTO-SAHAPTIAN VOWELS

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Nez Perce vowel harmony involves two groups of co-occurring vowels: /i e u/ and /i a o/. Most words contain only one of the two groups of vowels. Certain morphemes are variable and may have vowels of either group, while others have only the second group. The latter type of morpheme, whether stem or affix, dictates the vowel harmony. Three analyses, one in terms of prosody, and two in terms of distinctive features, are given, in an attempt to derive the modern Sahaptian vocalic systems from that of Proto-Sahaptian.

1. The Nez Perce vowels are /i e a o u/. Their norms are [i e a o u~m]. /o/ is always rounded; /i e a/ never are. There is considerable individual variation in the degree of rounding of /u/.

2. Among various grammarians of the Nez Perce language, including Smith (1846), Ainslie (1876), Morvillo (1888 and 1891), Phinney n.d. and 1934, Swadesh n.d., and Velten (1943), Morvillo was the first to mention vowel harmony.1 Boas, Phinney, Velten, and Rigsby have briefly discussed it,2 and have correctly stated that, with a few exceptions, the set /i e u/ or the set /i a o/ is found in a Nez Perce word.

The factor which determines which group of vowels appears in a given word is the vowel of the stem, according to Morvillo (1891:121); it is the word-final vowel, according to Rigsby (309).3 The following examples are illustrative:

{tót} 'father' (noun stem)
(1) /naʔtót/ 'my father'
(2) /tót-tóʔ/ 'father'

1 Morvillo’s authorship for these anonymous works has been established by Schoenberg (1967:66).
2 Morvillo (1891:121): ‘Litterae a in praefixis mutatur in litteram e, si in verbo praedominans radius sit e, i, u;' (160): ‘In verbis equidem temporis et modi, ut desinentia sit a vel e, plerumque fit; cujus diversitas ratio est repetenda, ex verbi radice, quae litterae finalis sonum ipsum modicum, ut, si verbi radix sit a vel o, desinentia sit a; si vero radix verbi sit e, i, vel u, desinentia sit e.’ Boas (1929:1): ‘The Nez Perce, an eastern Sahaptian language, has rigid rules of vocalic harmony according to which vowels may be divided into two classes: a and e as one group; all the others as a second group.’ Phinney (1934:xi): ‘There exists a general pattern of vowel agreement in the following form: when d occurs all the other vowels in the word (excepting i and u) including certain pronominal elements are d or e and similarly when a occurs all the other vowels are a or o.’ Velten (1942:274): ‘It should be noted that a NP [Nez Perce] word normally has either the vowels a, o, i or the vowels a, i, u, ... in the verb system they are functionally irrelevant. For every verb stem containing a (or o) also occurs with a (or u), and does every affix, with one exception: verbs with final suffixes containing a velar consonant (i.e., q or g) appear only with the vowels a, o, i ...’ Rigsby (1965:309): ‘Within the word boundary, only the vowel pairs /a o/ or /e u/ co-occur. /i/ is neutral with respect to vocalic harmony. The selection of vowel pairs is governed, at least partly, by certain invariant affixes.’
3 Though Rigsby states that the vowel harmony is partly governed ‘by certain invariant affixes’, the rules he proposes (Rules 3a, 3b, 4) give word-final vowels as the only conditioning factor.

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It is obvious that the stem-affix distinction plays little part in determining vowel harmony. Vowel harmony is determined by the stem in (1), (2), (9), (10), and (11), by the suffix in (6), (8), (14), and (17), by the prefix in (18) and (19), and by both the prefix and the suffix in (20). Pairs such as (2)–(4), (9)–(12), (10)–(13), (12)–(18), and (13)–(19) show that the word-final vowel is not the determining factor. In fact, in Nez Perce, there are two phonological classes of morphemes: (1) those which contain only one series of vowels /i a o/, and (2) those which may occur with either /i a o/ or /i e u/. Examples of the first class are [tô-t] ‘father’, [tâ-t] ‘go out’, [wat] ‘wade’ (prefix), [laykin] ‘near’ (suffix), [âyn] ‘for’ (suffix), and [qa] recent past tense suffix. Examples of the second class are [mêq] ‘paternal uncle’, [tûq] ‘skunk’, [êqet] ‘raspberry’, [wêyik] ‘go across’, [ne?] ‘my’ (prefix), [weye] ‘hurry’ (prefix), [e?] vocative suffix, and [ne] remote past tense suffix. We may call /i a o/ the DOMINANT SERIES and /i e u/ the RECESSIVE SERIES. When a morpheme in the dominant series is present in a word, with a few exceptions, the whole word has the dominant series; otherwise, it has the recessive series. The dual membership of /i/ will be discussed later.

Up to this point, the term word has been used loosely. Actually, the sequence in which only the set E (e a u) or the set A (i a o) occurs is not always conterminous with the morphological word, e.g. /#lêmha:y# ‘Lemhi’ (place name in Idaho), /#kû-tehmay#

1 The alternation is g before a vowel, x elsewhere.
2 ts and st contrast in Nez Perce, e.g. /#kû-tsaa/ ‘I am going out’, /#kû-ca/ ‘I went in’.
3 The form is without an overt subject pronominal prefix, and may mean either ‘I am going out’ or ‘you (eg.) are going out’. ‘(I)’ will be used to indicate this ambiguity.
4 Lemhi, originally Limbi, was named in the 1850’s, after a king in the Book of Mormon.
5 /cd lem/ ‘bull’ is a loan from Salish.
harmony is observable will be termed a harmonic sequence. The discrepancy
between morphological words and harmonic sequence is found in loanwords,
such as the two examples just cited, and in the speech of younger informants. In
terms of word classes, morphological words and harmonic sequences are always
coterminous in verbs, e.g. /wú-lelikepese/ ‘(I) am riding into bushes’, /wó-lalikapasaqa/ ‘(I) rode into bushes recently’. On the other hand, there is considerable
discrepancy in substantivites; for example, the word for the Red River in Idaho
has three freely varying forms: /tukpá-nwawárm/, /tukpá-nwawárm/, and
/tukpá-nwawárm/. Only in the last form is the harmonic sequence coterminous
with the morphological word.

In rapid speech, there is consistent anticipatory assimilation across the har-
monic sequence boundary by one syllable, e.g. normal speech /?ita?yátas
?ewsí:x/ ‘They are for sale’; rapid speech /?ita?yátas ?ewsí:x/; normal speech
/mínu-ke-pá?keíqa/ ‘Which one did they see?’; rapid speech /mínu-?e-pá?keíqa/; normal speech /?o?ma lepi? papá?yno?/ ‘Those two people will
come here’; rapid speech /?o?ma lepi? papá?yno?/.

3. Morphophonemically, it is clear that only a three-way contrast of vowels,
say i, e, u, is necessary, so long as there is another morphophonemic entity indi-
cating that the vowel in question is either in the dominant or recessive series.
A morphophonemic entity of this type is not unlike the prosody proposed by
Lyons 1962 for Turkish.

If Nez Perce vowel harmony is to be stated in the framework suggested by
Lyons, we need three phoeematic units for vowels, e.g. i e u, and two prosodies, e.g.
E and A, corresponding to the sets /i e u/ and /i a o/ respectively. Unlike
the situation in Turkish, there seem to be no simple articulatory oppositions
such as front-back or rounded-unrounded that are applicable to Nez Perce, but
E and A will suffice. If, as Lyons suggests, the prosodies are placed before the
segmental units, then the preceding examples will be rewritten as follows:

(21) A?étse ‘my father’
(22) Até? ‘father’
(23) E?e?mèq ‘my paternal uncle’
(24) Emè? ‘paternal uncle’
(25) Etés? ‘skunk’
(26) Atés?tey?ka ‘near a skunk’
(27) E?e?ket ‘raspberry’
(28) Aceq’te?y ‘for a raspberry’
(29) A?e?tse ‘(I) am going out’
(30) A?étese ‘(I) went out long ago’
(31) A?étese ‘(I) went out recently’
(32) Éew?yik ‘(I) am going across’
(33) Éew?yikse ‘(I) went across long ago’
(34) Awéyik ‘(I) went across recently’
(35) Awéyikse ‘(I) am hurrying across’
(36) Awéyikse ‘(I) hurried across long ago’
(37) Awéyikse ‘(I) hurried across recently’
(38) Awetewéyik ‘(I) am wading across’
(39) Awetewéyikse ‘(I) waded across long ago’
(40) Awetewéyikse ‘(I) waded across recently’

But in this notation, there is no way of identifying the conditioning morphemes
with vowels of the dominant series; thus *Anepbi:t* may indicate *Anep* + *Atêt*, *Anep* + *Etât*, or *Enep* + *Atêt*, provided we know the form to be bimorphic. In a harmonic sequence consisting of morphemes, there is only one possible combination of prosodies which will result in E for the whole sequence, i.e. a string of nothing but E's. On the other hand, there are $2^n - 1$ combinations which will result in the prosody A for the whole sequence. For example, a trinomorphic harmonic sequence resulting in A may have any of the following combinations of constituent prosodies: AAA, AAE, AEA, EAA, EEE, EAE, and EEA. The variety of possibilities which will produce A suggests that it is A, or the dominant series, which is to be marked for each morpheme, if we are to use zero marking for either A or E. The preceding may thus be rewritten:

(41) *ne? + Atêt* 'my father'
(42) *Atêt + e?* 'father!
(43) *ne? + mēq* 'my paternal uncle'
(44) *mēq + e?* 'paternal uncle!'
(45) *tāqe?* 'skunk'
(46) *tāqe? + Aleykin* 'near a skunk'
(47) *ecqecq* 'raspberry'
(48) *ceqecq* 'A'eyn 'for a raspberry'
(49) *A?êt + s + e* '(I) am going out'
(50) *A?êt + s + e + ne* '(I) went out long ago'
(51) *A?êt + s + e + Aqe* '(I) went out recently'
(52) *wēyik + s + e* '(I) am going across'
(53) *wēyik + s + e + ne* '(I) went across long ago'
(54) *wēyik + s + e + Aqe* '(I) went across recently'
(55) *weye + wēyik + s + e* '(I) am hurrying across'
(56) *weye + wēyik + s + e + ne* '(I) hurried across long ago'
(57) *weye + wēyik + s + e + Aqe* '(I) hurried across recently'
(58) *Awet + wēyik + s + e* '(I) am wading across'
(59) *Awet + wēyik + s + e + ne* '(I) waded across long ago'
(60) *Awet + wēyik + s + e + Aqe* '(I) waded across recently'

Basically, then, Nez Perce vowel harmony may be adequately described by four morphophonemic entities plus a harmonic sequence boundary marker: $i$, $e$, $u$, $A$, and $. Then the two loanwords may be rewritten: *lēm-A'ehy* 'Lemhi', *cādem-A'eyn* 'for the bull'. In actual orthographic practice, one need not use $A$: underlining would serve just as well, e.g. $[nētû:t] / na^2tô:t/.

/i/ occurs both in the dominant and recessive series, and it is impossible to tell its membership from the phonemic shape. The following examples show, however, that there is a distinction:

[*t'c]* 'mother' (noun stem)
(61) /nēt'c:/ 'my mother'
(62) /t'c'ə?:* 'mother!'
[*c'c*] 'paternal aunt' (noun stem)
(63) /nāc'c:/ 'my paternal aunt'
(64) /c'c'ə?:* 'paternal aunt!'
[q̪iːt̪i] 'place firmly' (verb stem)
(65) /t̪ul̪ː-gitt̪iːs/ 'I am putting my foot down firmly'
[čuːlt̪i] 'destroy' (verb stem)
(66) /t̪ol̪ː-čuːlt̪ikux/ '1sg (I am destroying by my foot)
The prosodic notations ?t̪c, Axt̪c, q̪iːt̪i, Axt̪uːlt̪i will give us the needed information to produce correct phonemic forms. It is to be noted that the prosodies thus abstracted are entities to be assigned to morphemes rather than to vocalic segments. An adequate Nez Perce lexicon should include such prosodic information for each morpheme.

4. According to Rigsby (306–9) there are three Sahaptin vowels, /i u a/, and five Proto-Sahaptian vowels, */i e a o u/. The correspondences are *i = S i, NP i; *e = S a, NP e; *a = S a, NP a; *o = S u, NP o; *u = S u, NP u.
Rigsby has further suggested that Proto-Sahaptian had a three-vowel system */i a u/, and proposes the following alpha-rule (his Rule 4) to account for the development of a five-vowel system with vowel harmony in Nez Perce and in the Palouse dialect of Sahaptin:

\[
\begin{align*}
\alpha_
\text{dif} & \rightarrow \left[ \begin{array}{c}
\text{dif} \\
+ \text{grv}
\end{array} \right] \\
+ \text{voc} \\
\text{ags}
\end{align*}
\]

Since Rigsby (309) states that ‘a rule similar to Rule 4 would seem desirable as a late phonological rule in a generative grammar of modern Nez Perce’, an examination of the results by this rule may be useful.

### Table 1

<table>
<thead>
<tr>
<th>Sahaptin</th>
<th>Nez Perce</th>
</tr>
</thead>
<tbody>
<tr>
<td>(67) wawá (Jaco 1931:215)</td>
<td>hawá-wá'14 'mosquito'</td>
</tr>
<tr>
<td>(68) pówá (Jaco 220)</td>
<td>piːsw' 'stone'</td>
</tr>
<tr>
<td>(69) m̄lĩỹ (Rig 307)</td>
<td>madẽyo 'ear'</td>
</tr>
<tr>
<td>(70) p̄p̄n̄p̄u (Jaco 240)</td>
<td>p̄l̄ẽp̄u 'four' (animate)</td>
</tr>
<tr>
<td>(71) t̄̃p̄̃̃a (Jaco 238)</td>
<td>t̄̃-ta' 'father!'</td>
</tr>
<tr>
<td>(72) š̄a (Jaco 238)</td>
<td>ʃ̄̃əc̄ 'mother!'</td>
</tr>
</tbody>
</table>

Let us consider the Sahaptin and Nez Perce pairs in Table 1. In Rigsby's three-vowel system, the reconstructed Proto-Sahaptian forms would be:14

Table 1

| (73) *-wawá | *mosquito' |
| (74) *piːswá | 'stone' |

---

14 The alternation is /čuːlt̪i/ after a word juncture or a consonant, /čuːlt̪i/ elsewhere.
15 An obvious alternative is to use a six-vowel system to distinguish the stem vowel in (61), (62), and (63) from the one in (63), (64), and (66). For a similar solution, cf. Lightner 1963.
16 Abbreviations: S, Sahaptin; NP, Nez Perce.
17 Every occurrence of α in a rule has the value ‘+’, or, alternatively, every occurrence has the value ‘−'; –α has the opposite value from α. Rigsby states the rule informally as ‘u/a → o/e before final vowels a/u’.
18 The Upper Nez Perce dialect form is /hawá-wá/. The Lower Nez Perce dialect presumably has /wawá/; cf. w̄d̄w̄a in Phinney (1934:10).
19 The reconstructed consonants are mine (Aoki 1982).
(75) *mi/aš/dayd\(^{14}\) 'ear'
(76) *pf-Napu 'four' (animate)
(77) *tō·ta?< 'father!'
(78) *tō·ca?< 'mother!'

By his Rule 4, the following Nez Perce forms would be generated:

(79) -wá·wa 'mosquito'
(80) píšwa 'stone'
(81) meéyu 'ear'
(82) pf·lepú 'four' (animate)
(83) tō·ta?< 'father!'
(84) Píca? 'mother!'

in which (79) and (82) are correct, but (80), (81), (83) and (84) are wrong.

This alpha-rule is inadequate for at least three reasons: (a) it fails to generate any Nez Perce forms in the recessive series with final /e/, e.g. (80); (b) it fails to generate any Nez Perce forms in the dominant series with final /o/ vowel, e.g. (81); (c) it fails to generate any /e/ or /o/ in Nez Perce words which end in a segment other than /a/ or /u/, e.g. (83), (84). It should be noted that approximately 39 per cent of harmonic sequences in Nez Perce texts are of the type that the rule fails to generate.

The main difficulty seems to lie not in postulating three vocalic entities in the proto-language but in assuming that they account for the entire vocalic system. In the following sections, three alternative analyses are presented.

5. The morphophonemic situation in Proto-Sahaptian vowels anticipates Nez Perce morphophonemics, since there are only two languages in the Sahaptian family, and Sahaptin (except for the Palouse dialect) lacks vowel harmony. Proto-Sahaptian morphophonemic entities will then include *i, *e, *u, and *A, and the proposed morphophonemic proto-forms are as shown in Table 2.

<table>
<thead>
<tr>
<th>Proto-Sahaptian</th>
<th>Sahaptin</th>
<th>Nez Perce</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Aw·we’</td>
<td>*wa·wá’</td>
<td>wá·wa</td>
</tr>
<tr>
<td>*píšwe’</td>
<td>píšá</td>
<td>pléwe</td>
</tr>
<tr>
<td>*Ami/eš/dayd</td>
<td>*mi/aš/dayd</td>
<td>mix‘yó</td>
</tr>
<tr>
<td>*pf· + Nepu + u?</td>
<td>*pf·Nepu</td>
<td>plëpu</td>
</tr>
<tr>
<td>*Atō·ta?</td>
<td>*tō·ta?</td>
<td>tō·ta?</td>
</tr>
<tr>
<td>*ti·ca?</td>
<td>*t·ca?</td>
<td>?t·ca?</td>
</tr>
</tbody>
</table>

The relationship among the proto-morphophonemes may be summarized as shown in Table 3.

6. At this point, an alternative analysis in terms of distinctive features may be proposed. The phonetic realization which corresponds to At is identical with that which corresponds to i. A solution which involves segment-sized phonological features as the conditioning factor requires (1) postulation of a non-coincident phonological entity or entities in order to distinguish At from i, (2)

\(^{14}\) Probably related to NP /mišit/ 'hear' (A series). NP /mádiyo/ may be due to regressive assimilation of i to a.

\(^{15}\) Probably analyzable into the reciprocal prefix pf· (E series), Nep 'two' (E series), and the animate classifier u (E series).
assignment of a phonological feature in the non-occurrent element as the triggering mechanism, and (3) inclusion of irrelevant elements, such as intervening consonants, in the rules. Furthermore, if \( A' i \) (or \( i \)) is to be represented by a non-occurrent phoneme \( X \) which is different from \( /i/ \), we need an additional rule to rewrite \( X \) as \( /i/ \).

A solution which involves morpheme-sized features, such as ‘plus Dominant’ and ‘minus Dominant’, enables us to circumvent the above-mentioned difficulties.

6.1. If we assume that Proto-Sahaptian had five vowels *\( i e a o u \), identical with modern Nez Perce (i.e. *\( e = +[a] \), hence \([+\text{compact}]\), the distinctive features may be represented as follows:

\[
\begin{align*}
i & \quad e \quad a \quad o \quad u \\
\text{dif} & \quad + \quad - \quad - \quad - \\
\text{cmp} & \quad - \quad + \quad + \quad - \\
\text{grv} & \quad - \quad - \quad + \quad +
\end{align*}
\]

The change of the recessive series \( /i e u/ \) to the dominant series \( /i a o/ \), in the environment of the latter, can be stated in the following rule:

\[
\text{Rule 1. } \begin{bmatrix} a \text{dif} \cr a \text{grv} \end{bmatrix} \rightarrow \begin{bmatrix} - \text{dif} \\
- \text{cmp} \\
+ \text{grv} \end{bmatrix} / \{ \ldots \ldots \ldots \} + \text{Dominant}
\]

No extra rules are needed for the derivation of modern Nez Perce vowels, since they are identical with what is generated after the application of Rule 1.

Sahaptin vowels may be derived by the following alpha-rule:

\[
\text{Rule 2. } \begin{bmatrix} - \text{dif} \cr a \text{grv} \end{bmatrix} \rightarrow \begin{bmatrix} a \text{dif} \\
+ \text{grv} \end{bmatrix}
\]

6.2. If, on the other hand, we assume that Proto-Sahaptian had three vowels *\( i a u \), identical with modern Sahaptin, we need no rules for Sahaptin and only one rule to obtain phonetically attested reflexes in Nez Perce:

\[
\text{Rule 3. } V \rightarrow \begin{bmatrix} [-\text{grv}] \\
- \text{Dom} \\
[-\text{dif}] \\
+ \text{Dom} \\
+ \text{grv} \end{bmatrix}
\]
7. Nez Perce vowel harmony has at least three notable characteristics: (1) There is a distinction between dominant and recessive series instead of two series of equal power (with or without a third neutral series) as exemplified in the Altaic languages. (2) Any morpheme or morphemes in the dominant series, whether prefix (e.g. 58, 59), stem (e.g. 41, 42, 49, 50), suffix (e.g. 46, 48, 54, 57), or any combination of these (e.g. 51, 60), may trigger the vowel harmony; hence the harmony may be progressive, regressive, or simultaneously progressive and regressive. (3) No single distinctive feature can be isolated in defining one series in contrast with the other.

As for the Proto-Sahaptian vowels, it seems clear, on the basis of the discussion in 6 and the simpler and more satisfactory distinctive-feature analysis in 6.2, that Proto-Sahaptian had three vowels and one morpheme-sized feature.

In conclusion, it may be possible to say, if the proposed Proto-Sahaptian vocalic situation reflects the actual history, that modern Nez Perce is in the first stage of losing vowel harmony by developing a neutral vowel in the high front area, not unlike the stage of Classical Mongolian, while Sahaptin has gone all the way to loss of vowel harmony.43

REFERENCES


43 There is a possibility that the vowel harmony in the Sahaptian family is a result of increase in number of vowels caused by diffusion. The Flatheads, with whom Nez Perces were in symbiosis well into the historical period, have a five-vowel system like that of modern Nez Perce (cf. Reichard 1938). The geographical contiguity of Palouse, the only Sahaptin dialect that has a five-vowel system with vowel harmony, may indicate that the Palouse vowel system is a result of diffusion from Nez Perce. Until a third daughter language is unearthed, there is no way of establishing the historicity of Proto-Sahaptian vowel harmony.

44 To quote Poppe (1954:11): 'A word can contain only back vowels (a, o, u) or only front vowels (e, ø, ø). Back and front vowels do not occur together in any words except loan words. The vowel i, however, though pronounced as a front vowel, does occur in both types of words and is, therefore, considered a neutral vowel. The explanation is that in Proto-Mongolian there were two vowels: i which occurred in back vocalic words and i which occurred in words with front vowels only. Thus in Proto-Mongolian there were no neutral vowels at all and all vowels were subject to the rules of vocalic harmony. In written Mongolian and in the existing Mongolian language, the i and i have converged into one sound which is i.' Cf. Grünsech and Krüger (1955:18), Poppe (1955:32, 1960:133-4). It is interesting to note that Uighuric script, one of the writing systems used for Classical Mongolian, is largely phonemic in word-initial allophones, while it is archiphonemic in medial and word-final allophones, e.g. non-initial a and e are homographic.

45 The Nez Perce data in this paper were collected by the author during the summers of 1960, 1961, 1962, 1965, and 1966 under the joint sponsorship of the Survey of California Indian Languages, Department of Linguistics, University of California, Berkeley, and the Idaho State Historical Society. I wish to express my grateful thanks to Professors William Bright, Mary R. Haas, Morris Halle, William F. Shipley, William S-Y. Wang, and Karl E. Zimmer, who read earlier drafts of this paper and offered many valuable suggestions.
WATERS, NATE. 1956. Some aspects of the phonology of the nominal forms of the Turkish word. BSOAS 18:578-91.