"LA DOUBLE VIE DE W"
OR
THE STATUS OF [w] IN KARUK

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In Karuk there are two phonetically identical but phonologically distinct labial glides. Based on the patterning of these glides in glide deletion, coda nasalization, and vowel harmony, I will argue that one of the glides is consonantal in nature and the other is vocalic in nature.

1. **Introduction**

Karuk has two phonetically identical but phonologically distinct labial glides. I will present evidence that one of the glides is consonantal in nature and the other is vocalic in nature. The existence of a contrast between vocalic and consonantal glides in a single language argues against the widely-held assumption that glides and vowels are featurally identical and differ only in prosodic properties.

2. **Theoretical background**

The distinction between vocalic and consonantal glides may be captured representationally using the model of feature organization presented in Clements & Hume (1994). (See also Clements, 1991, Herzallah, 1991, and Hume, 1992.)

\[(1)\]

(1) vocalic glides  (b) consonantal glides

```
           C-place
            |
           /\   /\  
          /   /
         /     
    vocalic

aperture

V-place

[-open]

[F]

[F]
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In these representations, vocalic segments have a vocalic node dominating the aperture and V-place nodes. This is motivated by harmony processes in which all height and place features spread across intervening consonants. The separation of the vocalic node into aperture and V-place nodes is motivated by assimilation processes in which only height features, to the exclusion of place
features, or only place features, to the exclusion of height features, spread. The C-place node dominating the vocalic node is motivated by the spreading of minor articulations with major articulations, as well as by the cross-linguistic inability of consonantal place features to spread from consonant to consonant across a vowel. (Since glides are redundantly high, the aperture features for glides are not crucial in my analysis and will be disregarded throughout.) Consonantal segments are represented with their place features immediately dominated by the C-place node, as in (1b) above.

The No-Crossing Constraint in (2) successfully prevents elements from being multiply-linked for features across vowels.

(2) No-Crossing Constraint

Association lines linking two elements on tier \( j \) to two elements on tier \( k \) may not cross. (Clements & Hume, 1994)

The ill-formed multiply-linked structures in (3), (adopted from Hume, 1992) which represent multiple-linking of features across a vocalic segment, all violate the No-Crossing Constraint.

(3) Ill-formed multiply-linked structures:

a) \( \ast \) C-place C-place C-place

\( \text{vocalic vocalic vocalic} \)

\( [F1] \) \( [F2] \)

b) \( \ast \) C-place C-place C-place

\( \text{vocalic vocalic vocalic} \)

\( [F1] \) \( [F2] \)

c) \( \ast \) C-place C-place C-place

\( \text{vocalic vocalic vocalic} \)

\( [F1] \) \( [F2] \)

The well-formed multiply-linked structures in (4) on the next page, (adopted from Hume, 1992) which represent multiple-linking of features across a consonantal segment, do not violate the No-Crossing Constraint.

3. Vocalic and consonantal glides cross-linguistically

Cross-linguistic evidence has shown that there is a difference between vocalic and consonantal glides. (This analysis of vocalic and consonantal glides follows Hume, 1993.)

In Ainu the translitrizing suffix vowel assimilates completely to the stem vowel, so the vocalic nodes of the suffix and stem vowels are multiply-linked across the consonant. (Data in (5) drawn from Itô (1984), original data from Chiri (1952)).

(4) Well-formed multiply-linked

a) C-place C-place C-place

\( \text{vocalic} \)

\( [F1] \) \( [F2] \)

V-place

b) C-place C-place C-place

\( \text{vocalic} \)

\( [F1] \) \( [F2] \)

V-place

c) C-place C-place C-place

\( \text{vocalic} \)

\( [F1] \) \( [F2] \)

V-place

(5) a. [mak-a] 'to open'

b. [ker-e] 'to touch'

c. [pis-i] 'to ask'

d. [pop-o] 'to boil'

e. [tus-u] 'to shake'

The multiply-linked surface repre- consonant from (5h), for example, is

(6)

\( \text{C-place C-place C-place} \)

\( \text{vocalic} \)

\( [F1] \) \( [F2] \)

V-place

The opacity of glides to vowel hart vocalic nature. If glides are repre- multiple linking of the vocalic node, as shown in (8). This is the
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features across vowels.

two elements on tier j to two
cross. (Clements & Hume, 1994)
architectures in (3), adapted from
multiple-linking of features across a
No-Crossing Constraint.

b) * C-place C-place C-place
vocalic vocalic vocalic
V-place V-place
[F1] [F2]

The multiply-linked surface representation of the vowels across the
consonant from (5h), for example, is given in (6).

6) [i k i]
C-place C-place C-place
V-place
[F1] [F2] [dorsal]

In Ainu, the glides are opaque to vowel harmony. The suffix vowel in
these cases surfaces as [e]. This may be the underlying form of the
suffix or this may be the default value for an unspecified vowel. The
crucial point is that the suffix vowel is not assimilated.

7) a. [ray-e] "to kill" g. [say-e] "to wind"
 b. [chaw-e] "to solve" h. [law-e] "to pull"
 c. [hew-e] "to slant" i. [rew-e] "to bend"
 d. [piw-e] "to cause to run" j. [chiw-e] "to sting"
 e. [poy-e] "to mix" k. [moy-e] "to move"
 f. [huy-e] "to observe" l. [tuy-e] "to cut"

The opacity of glides to vowel harmony in Ainu demonstrates their
classic nature. If glides are represented as vocalic, as in (1a), then
multiple linking of the vocalic node across a glide would be ill-
formed, as shown in (8). This is the desired result, blocking harmony.
Therefore, glides in Ainu are best represented as vocalic. Some languages, on the other hand, have glides which are best represented as consonantal. Kirghiz (data and analysis from McDougall, 1994; original data from Herbert & Poppe, 1963) and Efik (data and analysis from Parkinson, 1994) are two such languages. One effect of the consonantal nature of glides in Kirghiz and Efik is their transparency in vowel harmony. In Kirghiz, a vowel agrees in coronality and labiality with the preceding vowel.

Glides in Kirghiz are transparent to vowel harmony.

Similarly, in Efik the non-root vowel /e/ (shown here using the second person singular subject marker and the negative particle /ke/) assimilates in place features to the following stem vowel.

Following Parkinson (1994), this is analyzed as place assimilation which, as exemplified in (12), results in the V-place node of the root vowel being multiply-linked to both the root and the prefix vowels.

Even if a glide intervenes, the vowel's place features.

The transparency of glides to their consonantal nature, if glental (as in (14a)), then harm in a well-formed structure. On sented as vocalic (as in (14b)), incorrectly result in an ill-formed No-Crossing Constraint.

The data from Ainu, Kirghiz have either vocalic or consonantal theory must recognize two dislimts. Given the existence of these rep contrast between vocalic and cons should exist.

4. Karuk

The prediction that vocalic a in a single language is confirmed from Karuk show a contrast between nasal and vocalic glides. Both i prosodic position.

Evidence for the status of glides as phonological patterning, as parts 5,

Data from Karuk are drawn f a slightly different transcription sy
Even if a glide intervenes, the vowel assimilates to the following vowel's place features.

(13) a. [i-twá] 'you (sg.) cry'
   b. [o-wuí] 'you (sg.) show'
   c. [i-yúk] 'you (sg.) drop (a plate)'
   d. [i-yíbi-ké-yíbi] 'she is not flogging'
   e. [i-wút-kó-wuí] 'she is not showing'
   f. [i-wáp-ka-wáp] 'she is not tearing'

The transparency of glides to vowel harmony in Efik demonstrates their consonantal nature. If glides in Efik are represented as consonantal (as in (14a)), then harmony across the glide correctly results in a well-formed structure. On the other hand, if glides are represented as vocalic (as in (14b)), then harmony across the glide would incorrectly result in an ill-formed structure due to violation of the No-Crossing Constraint.

(14) a. [a + y a]    b. [a + y a]
    C-place C-place C-place    C-place C-place C-place
    vocalic vocalic vocalic
    V-place V-place V-place
    [coronal] [coronal] [coronal]

    The data from Ainu, Kirghiz, and Efik show that languages may have either vocalic or consonantal glides. Therefore, phonological theory must recognize two distinct representations for a given glide. Given the existence of these representations, the prediction is that a contrast between vocalic and consonantal glides in a single language should exist.

4. Karuk

The prediction that vocalic and consonantal glides may contrast in a single language is confirmed in Karuk, a Hakan language. Data from Karuk show a contrast between phonetically identical consonantal and vocalic glides. Both types of glides occur in the same prosodic position.

(15) vocalic /w/    consonantal /w/
    a. /íkriw/ 'to sit, live'    d. /íkyiw/ 'to fall'
    b. /baw/ 'to knock down acorns'    e. /baw/ 'to float'
    c. /yaw/ 'good'    f. /saw/ 'to flow'

Evidence for the status of glides as vocalic or consonantal comes from phonological patterning, as parts 5, 6, and 7 will show.

Data from Karuk are drawn from Bright (1957). I have adopted a slightly different transcription system than the one used by Bright.
I transcribe all bilabial spirants as /w/. Bright transcribes what I am calling "consonantal /w/" as /w/ and what I am calling "vocalic /w/" as /v/. I transcribe all length on vowels as /l/. Bright transcribes underlying length on vowels with a single dot and derived length with a colon. I transcribe all rhotic approximants as /r/. Bright transcribes all stem-final /r/ as /R/, to indicate that they nasalize pre-consonantally (see part 6 for discussion of nasalization). The phonemic inventory of Karuk is presented in (16). Length is distinctive on vowels, but the phonemic status of [o:] and [e:] is questionable, since they only appear long and are often transparently the result of coalescence of a high vowel with a low vowel. Additional diacritics used here (as well as by Bright) include the high level tone marked [ː], and the falling tone marked [ə]. (Tonal phenomena and lengthening and shortening phenomena will not be addressed in this paper.)

(16) Phoneme Inventory

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5. Glide deletion

The two types of glides in Karuk pattern differently in glide deletion. Vocalic glides delete between vowels.

(17) a. /kiw + īrīh/ → [kiʁːiːɾ] 'to sit down'
b. /biw + īrīh/ → [biɾːiːɾ] 'to push down'
c. /piw + īrīh/ → [piɾːiːɾ] 'to stop down'
d. /ʔāxaw + ak/ → [ʔaxaɾ] 'cliff'
e. /ʔikyw + ara/ → [ʔikyrə] 'to make with'
f. /ʔay + at/ → [ʔaɾ] 'was afraid of'

Evidence that this is deletion, not insertion, comes from the unpredictability of the word-final glide.

(18) a. /ʔikyw/ 'to make'
b. /ʔiwyaw/ 'to pour'
c. /ʔāxaw/ 'to collapse, used esp. of earth'
d. /ʔaɾəxay/ 'to take (something) from (someone)'
e. /ʔaɾəw/ 'California wild grape'
f. /ʔaɾəy/ 'face'
g. /ʔuːw/ 'to put, take'
h. /ʔuːy/ 'mountain, hill'

Further evidence that this is done appearance of these glides in consonantally.

(19) a. /plw + karə/ → [plwːɾ]
b. /fiyəw + rammih/ → [fiiɾːəɾ]
c. /fiyəw + kəɾiɾ/ → [fiiɾːɾ]

Therefore, the glide-ʊ alternation not glide-insertion.

Other segments do not delete

(20) a. /təɾir + ara/ → [təɾiɾəɾ]
b. /ṭaɾkəɾ + at/ → [ṭaɾkəɾ]
c. /kəɾ + ara/ → [kəɾəɾ]
d. /ʔəɾakəɾ + əɾiɾ/ → [ʔəɾakəɾ]
e. /ʔiɾəɾiɾ + əɾiɾ/ → [ʔiɾəɾiɾ]
f. /ʔeɾəɾ + eɾ/ → [ʔeɾəɾ]

The difference between segments those which do not is that the seg node. The distinguishing feature of (sonorant), because [ɾ m] do not del be [continuant], because [ɾ h] do nor can it be a place feature, beta delete, as shown in (20b, c), coron in (20), dorsals which do not delete segments which do not delete, as unifying the deleting segments and segments is their vocalic node.

(21) *μ = μ

vocalic vocalic vocalic

Another set of glides does not

(22) a. /ʁikir + əɾiɾ/ → [ʁikyrəɾ]
b. /ɾəɾaw + at/ → [ɾəɾaw]
c. /ɾəɾaw + ara/ → [ɾəɾəɾaɾ]
d. /ɾiɾ + iɾuɾ/ → [ɾiɾuɾ]
e. /ɾəɾaw + əɾ/ → [ɾəɾaɾ]
f. /ɾəɾaw + uk/ → [ɾəɾaɾəɾ]
g. /ɾiɾiɾ + a/ → [ɾiɾiɾaɾ]

Given the argument that deleting s vocalic node, the non-deleting segm larized with a vocalic node. (23) st
Further evidence that this is deletion, not insertion, comes from the appearance of these glides in other environments, such as pre-consonantally.

19) a. /piw + kara/ → [piw’kara] ‘to step out over’
b. /iyway + rānih/ → [iywa’rānih] ‘to pour into’
c. /iyway + kurih/ → [iywa’yurih] ‘to pour (into a hole)’

Therefore, the glide-Ø alternation must be analyzed as glide-deletion, not glide-insertion.

Other segments do not delete intervocally.

20) a. /tāsrī + ara/ → [tāsrāra] ‘brush for acorn flour’
b. /tā:kram + ar/ → [tā:kramar] ‘to go argue’
c. /ikrūp + ara/ → [ikrūpara] ‘to sew with’
d. /iškāx + išrif/ → [iškāxorif] ‘to quiet down’
e. /iḥyarif + išrif/ → [iḥyarifirif] ‘to stand still’
f. /tēk40 + e:p/ → [tēk4ep] ‘to take away from’

The difference between segments which delete intervocally and those which do not is that the segments which delete have a vocalic node. The distinguishing feature of segments which delete cannot be [sonorant], because [r m] do not delete, as shown in (20k, b), nor can it be [continuant], because [x h ŋ] do not delete, as shown in (20d, e, f), nor can it be a place feature, because there are labials which do not delete, as shown in (20b, c), coronals which do not delete, as shown in (20), dorsals which do not delete, as shown in (20d), and placeless segments which do not delete, as shown in (20e). The only feature unifying the deleting segments and excluding all of the non-deleting segments is their vocalic node.

21) *μ
   μ
   μ
   μ

vocalic vocalic vocalic

Another set of glides does not delete intervocally.

22) a. /ikyiw + išrih/ → [ikyiwśrih] ‘to fall down’
b. /tā:saw + a/ → [tā:saw] ‘ate’
c. /ikrāw + oral/ → [ikrāwora] ‘to grind with’
d. /tīw + iruw/ → [tīwuru] ‘to be nearly dead from exhaustion’
e. /saw + a/ → [saw] ‘river’
f. /tāraw + uk/ → [tārawuk] ‘to start from’
g. /tātwi + a/ → [tātwiwa] ‘burden-basket load’

Given the argument that deleting segments are characterized with a vocalic node, the non-deleting segments in (22) must not be characterized with a vocalic node. (23) shows how the distinct behavior of
glides which delete and glides which do not may be attributed to their feature structure.

(23) a. /piw + iširi/ \(\rightarrow [p\tilde{i}\tilde{s}\tilde{r}i]\)  
    b. /lw + iro/ \(\rightarrow [\tilde{l}\tilde{w}\tilde{r}]\)

    [root root root]
    C-place C-place C-place

    vocalic vocalic vocalic

    V-place V-place V-place

    [coronal] [coronal] [coronal]
    [labial] [labial] [labial]

6. Coda nasalization

The two types of glides also pattern differently in coda nasalization. /w/ nasalizes in non-final coda position (alternatively: pre-consonantly).

(24) a. /kiw + taku/ \(\rightarrow [k\tilde{i}\tilde{m}\tilde{t}\tilde{k}]\) 'to sit on'
    b. /kim + ko/ \(\rightarrow [\tilde{k}\tilde{m}\tilde{a}\tilde{ko}]\) 'to go there to dance'
    c. /išir + reduplication/ \(\rightarrow [\tilde{t}\tilde{s}\tilde{m}\tilde{s}\tilde{i}]\) 'to brush repeatedly'
    d. /wir + tih/ \(\rightarrow [\tilde{w}\tilde{i}\tilde{m}\tilde{t}]\) 'to be flowing'
    e. /kmar + reduplication/ \(\rightarrow [\tilde{k}\tilde{m}\tilde{m}\tilde{m}\tilde{m}]\) 'to beat up'

The consonantal /w/ also nasalizes pre-consonantly. The stems with final /w/ s which nasalize (25) are those stems whose final /w/ s did not delete in glide-deletion (22). /i/ nasalizes following a nasal segment, as shown in (25c, c, g, l).

(25) a. /kiyw + sura/ \(\rightarrow [k\tilde{i}\tilde{y}\tilde{m}\tilde{s}\tilde{r}]\) 'to fall off'
    b. /raw + tih/ \(\rightarrow [\tilde{r}\tilde{m}\tilde{h}]\) 'to be eating'
    c. /ikraw + raw + a/ \(\rightarrow [\tilde{i}\tilde{k}\tilde{r}\tilde{m}\tilde{m}\tilde{a}]\) 'hopper for meal'
    d. /lw + kara/ \(\rightarrow [\tilde{l}\tilde{w}\tilde{m}\tilde{k}\tilde{a}]\) 'to drown'
    e. /saw + rupu/ \(\rightarrow [\tilde{s}\tilde{m}\tilde{m}\tilde{m}\tilde{p}]\) 'to flow downstream'
    f. /sraw + sipriw/ \(\rightarrow [\tilde{s}\tilde{r}\tilde{m}\tilde{s}\tilde{p}\tilde{r}]\) 'to start out'
    g. /fatw + ram/ \(\rightarrow [\tilde{f}\tilde{t}\tilde{m}\tilde{m}\tilde{s}\tilde{r}]\) 'to pack basket'

There seems to be a constraint against [+son, +cont] segments with a consonantal constriction in non-final coda position.

(26)

* [+son]


Oral Cavity


[+cont]

[C-place]

[F]

7. Vowel harmony

The two types of glides also pattern differently in coda nasalization. /w/ nasalizes in non-final coda position. The consonantal /w/ nasalizes pre-consonantly. The stems with final /w/ s which nasalize (25) are those stems whose final /w/ s did not delete in glide-deletion (22). /i/ nasalizes following a nasal segment, as shown in (25c, c, g, l).

(29) a. /kxip + Vwa/ \(\rightarrow [\tilde{i}]\)
    b. /axap + Vwa/ \(\rightarrow [\tilde{a}]\)
    c. /kfo + Vwa/ \(\rightarrow [\tilde{i}]\)
    d. /ak if + Vhuna/ \(\rightarrow [\tilde{a}]\)
    e. /pa f + Vhuna/ \(\rightarrow [\tilde{e}]\)
    f. /kfo + Vhuna/ \(\rightarrow [\tilde{a}]\)

The harmony produces a suffix vocalic node of the stem vowel.

(30)

C-place C-place C-place

vocalic

V-place

[F1]

[F2]

If the consonantal /w/ is specific to consonantal

V-place

[F1]

[F2]
which do not may be attributed to

b. /'kriw + r:m/ → [krivra:m] 'house'

so pattern differently in coda nasal-al coda position (alternatively: pre-

[kumak] 'to sit on'
[kimak] 'to go there to dance'
[akasir] 'to brush repeatedly'
[wumak] 'to be flowing'
[kummar] 'to beat up'
asalizes pre-consonantally. The stems (25) are exactly those stems whose
glide-deletion (22). /r/ nasalizes
in (25c, e, g).

/y:ansru/ 'to fall off'
/smih/ 'to be eating'
/m:nawa/ 'hopper for meal'
/mkar/ 'to drown'
/m:apa/ 'to flow downriver'
/ama:piw/ 'to start out'
/dimana/ 'pack basket'
raint against [+son, +cont] segments
a non-final coda position.

vowel harmony

The two types of glides also pattern differently in vowel harmony. There are a few suffixes with harmonizing initial vowels
(which are represented with V).

a. /'kkip + Vrwa/ → [kkk:jwana] 'to fly over'
b. /taxarap + Vrwa/ → [taxarap:jwana] 'to stride over'
c. /kkfuk + Vrwa/ → [kkfuk:jwana] 'to climb over'
d. /takmih + Vuna/ → [takmih:juna] 'to roll around'
e. /pa:j + Vuna/ → [pa:jawa] 'to throw around'
f. /kkfuk + Vuna/ → [kkfuk:juna] 'to crawl around'

The harmony produces a suffix vowel multiply-linked with the
vocalic node of the stem vowel²

(30)

If the consonantal /w/ is specified with [labial] immediately domi-
nated by C-place, the prediction would be that it should be tran-
sparent to vowel harmony (similar to the examples from Kirghiz and Efik discussed above in (10) and (13)). The following forms provide
suggestive evidence that the consonantal /w/ is transparent. These
are the only available examples of a stem with a final glide which has
been shown to be consonantal (see (22a) and (25a)) combining
with harmonizing suffixes. The harmonizing vowel does have the same quality as the final stem vowel.

(31) a. /khyw + Vwraθ/ → [khyw-wraθ] 'to fall into a sweathouse'
b. /khyw + Vwruk/ → [khyw-wruk] 'to fall over (a bank)'

The well-formed structure that would result from multiple-linking of vocalic nodes across a consonantal glide is shown here.

(32) [4 w + i]
   C-place  C-place  C-place
   vocalic
   V-place
   [coronal]  [labial]

As expected, the vocalic /w/ patterns differently than the consonantal /w/ in vowel harmony. The only available example of a stem with a final glide which has been shown to be vocalic combining with a harmonizing suffix is shown here. (See 17d and 27d for evidence of this glide's vocalic nature.)

(33) /tâxaw + Vwruk/ → [tâxawruk] 'earth) to slide down over (a bank)'

One possible explanation for this form is that multiple-linkage across the vocalic glide is prohibited.

(34) * [a w + a]
   C-place  C-place  C-place
   vocalic
   V-place  V-place
   [pharyngeal]  [labial]

Since the unspecified vowel remains unspecified on the surface, it is deleted by well-formedness constraints. The degemination of adjacent identical oral sonorants which results is seen elsewhere in the language. Despite a lack of independent supporting evidence for this proposal, the crucial point here is that the vocalic /w/ does not pattern with the consonantal /w/ in being transparent to vowel harmony.

8. Conclusion

In conclusion, there are two phonologically distinct /w/s in Karuk—one which patterns with /i/ and one which patterns with /y/.

The /w/ which patterns with /i/ in nature. It does not delete but remains in position, and it is transparent to vowel harmony. It may be represented as bearing only a C-place [coronal]. /w/ can be characterized as vocalic, not nasalized in coda harmony. It may be represented as a V-place node. The facts from K provide new evidence regarding these languages. Not only can languages have more than one vocalic glide, but also a single language with both vocalic and nasal glides.

* Grateful acknowledgment to M. Parkinson for comments on earlier drafts of this project. Thanks also to M. Parkinson for comments on earlier drafts of this project.

1 Pronunciations of the name "Karuk" from cases involving [ɛ] and [o]-sonorant suffix vowels is [ɛ] and when the stem vowel is [u]. There are two possible analyses linking vocalic nodes, but [ɛ] derives from the high vowel [au], or else this is place harmony specified high suffix vowels, and the vocalic vowel produces the correct result.

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a harmonizing vowel does have the vowel.

'/w-ivrag' 'to fall into a sweathouse'
'/w-ivruk' 'to fall over (a bank)' would result from multiple-linking of

tal glide is shown here.

'/w/ patterns differently than the con-
y. The only available example of a
is been shown to be vocalic combining
own here. (See 17d and 27d for evi-
d.

vruk' '(earth) to slide down over
(a bank)'

is form is that multiple-linkage across

nains unspecified on the surface, it is
nstraints. The degeneration of adjac-
hich results is seen elsewhere in the
pendent supporting evidence for this
that the vocalic '/w/ does not pat-
w/ in being transparent to vowel

two phonologically distinct '/w/s in
/
/r/ and one which patterns with /y/.

The '/w/ which patterns with /l/ can be characterized as consonantal
in nature. It does not delete between vowels, it nasalizes in coda
position, and it is transparent to vowel harmony. It can be repre-
sented as bearing only a C-place node. The '/w/ which patterns with
/yl/ can be characterized as vocalic in nature. It deletes between
vowels, does not nasalize in coda position, and is opaque to vowel
harmony. It may be represented as bearing also a vocalic and
V-place node. The facts from Karuk are significant because they
provide new evidence regarding the status of glides in the world's
languages. Not only can languages have *either* vocalic or consonantal
glides, but also a single language can have *both* vocalic and con-
sonantal glides.

NOTES

* Grateful acknowledgment to D. Odden and E. Hume for help
with this project. Thanks also to M. Bradshaw, C. McDougall, and F.
Parkinson for comments on earlier drafts. Any mistakes are, of
course, my own.

1 Pronunciations of the name of this language vary. "Karok" is
the more anglicized version of the name while "Karuk" is preferred
by native speakers. Therefore, most recent works written about this
language used the name "Karuk." (Monica Macaulay, personal com-
munication.)

2 Problems with assuming that this is total assimilation arise
from cases involving [e] and [o:]. When the stem vowel is [e:], the
suffix vowel is [i] and when the stem vowel is [o:], the suffix vowel is
[i]. There are two possible analyses. Either this is complete harmony
linking vocalic nodes, but [e:] derives from /w/ and [o:] derives from
/wu/, or else this is place harmony linking V-place nodes to pre-
specified high suffix vowels, and a constraint against high pharyngeal
vowels produces the correct result when the stem vowel is /wu/.

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In this paper we challenge the idea that there exists a distinctive feature [cons] in cases in which [consonantal] has natural classes of sound changes that a sound undergoes. Evidence in support of the feature that [consonantal] is superfluous from feature theory.

1. Introduction

The status of the major class feature [consonantal] has been discussed recently in various theoretical frameworks. One of the most recent, the Chomsky & Halle (1968:302) definition identifies [consonantal] as a natural class that cannot spread or dissimilate across a word boundary or deletion. This proposal is challenged by Cho & Inkelas (1993) who claim that there is no such evidence for [consonantal] in cases of natural classes of sound changes. Our proposal is that there is no such evidence for [consonantal] in cases of natural classes of sound changes.

Before reviewing the evidence, it is important to note that there is no consensus about the status of the feature [consonantal]. Evidence in support for the claim that [consonantal] is a natural class has been advanced by various researchers. For example, Chomsky & Halle (1968:302) define [consonantal] as a natural class of sounds. This is in contrast to the proposal of Cho & Inkelas (1993) who claim that there is no such evidence for [consonantal] in cases of natural classes of sound changes. Our proposal is that there is no such evidence for [consonantal] in cases of natural classes of sound changes.

1.1. Consonantal sounds

Consonantal sounds are produced in the midsagittal region of the vocal tract. Consonantal sounds are produced with stronger articulatory effort than vowels (Chomsky & Halle 1968:302).

The intent of this definition is to group consonants as one natural class, and