Morphology and prosody in Huave phonological domains

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(1) Huave: a language isolate of Oaxaca State, Mexico. All data here are from fieldwork on the San Francisco del Mar dialect (<100 fluent speakers, all elderly & bilingual in Spanish).

(2) Interlocking research questions:
   a. What is the morphological structure of verbs? (Constituency, affix order...)
   b. To what extent do morphological domains correspond to phonological domains? Some possibilities:
      ... some phonology applies only at specific morphological “levels” or even in specific constructions
      ... no morphologically conditioned phonology; environments defined in purely phonological terms
      ... some phonology is defined wrt the Phonological Word (≠ Morphological Word)

(3) Huave has the typologically interesting morphological feature of “mobile affixes” (Noyer 1993), which are prefixes in some contexts, and suffixes in others. A couple of examples:

<table>
<thead>
<tr>
<th>Prefixal realization</th>
<th>Suffixal realization</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Subordinate (SUB) -m-</td>
<td>m-a-rang</td>
</tr>
<tr>
<td></td>
<td>SUB-TV-do</td>
</tr>
<tr>
<td></td>
<td>‘that s/he does (it)’</td>
</tr>
<tr>
<td>b. First person (1) -s-</td>
<td>s-a-rang</td>
</tr>
<tr>
<td></td>
<td>1-TV-do</td>
</tr>
<tr>
<td></td>
<td>‘I do (it)’</td>
</tr>
</tbody>
</table>

(4) Given that mobile affixes “hop around” between different linear positions, how can we talk about verb-internal structure and principles of affix ordering?
   ➔ Separate sets of principles governing affix order: morphological and phonological

(5) Morphological: It can be demonstrated that affixes occur at a fixed distance from the root relative to other affixes (fixed order of attachment). “Layer model” with underspecified direction of branching:

[Layer 4 attaches here]
[Layer 3 attaches here]
[Layer 2 attaches here]
[Layer 1 attaches here]

[L4] [L3] [L2] [L1] [Stem] [L0] [L1] [L2] [L3] [L4]
Phonological: Within these morphological constraints, prefixal vs. suffixal realization is conditioned largely by phonological properties of the base to which the affix attaches (Kim, in press). Mobile affixes are suffixes by default, but prefix to V-initial stems if this will avert the need for epenthesis. Crucial separation of “affix hierarchy” (abstract constituent structure) from “affix placement” (factors locating a mobile affix on one or another side of the stem; Stump 1993, Noyer 1997).

Do the independently motivated morphological constituents coincide with phonological domains?

Outline of talk
- Motivating the layer model of Huave verb structure
- Phonology that is sensitive to “inner” (Stem, L1) and “outer” (L3+) layers
- The stem + suffix domain: phonology that excludes prefixes --> not a morphological constituent
- Is the stem + suffix a Phonological Word? If not, what other options exist?

Hierarchical constituent structure in the Huave verb

This section: Despite affix mobility, it can be shown that affixes attach in a fixed order. The only thing that varies is which side of the verb the mobile affixes surface on.

In addition to mobile affixes, Huave has prefixes and suffixes of the normal kind.

- **Future (FUT)** i-
  - i-m-a-rang ‘s/he will do (it)’

- “Reflexive” (RFL) -e
  - a-rang-e ‘s/he does (it) for self’

- 1st & 2nd plural (PL) -n
  - i-rang-an ‘you (pl.) do (it)’

Two kinds of stems
- “Prefixing” (default, all trans. & some intrans.) - form stems with a valence-related theme vowel (TV)
- “Suffixing” (remaining intransitives) - if C-final, form stems with a suffix vowel (V) of predictable harmonic quality and debatable morphological status
- (Terms are based on placement of earliest-attaching mobile affixes, and do not mean that a stem conditions only one or the other type of affix placement)

Prefixing stems  |  Suffixing stems  
---|---
 a. a-jaw ‘see, know (it)’  |  d. mojk-o ‘lie face down’
  TV-see face.down-V  
 b. a-chiot ‘break (it)’  |  e. chiot-a ‘break’, itr.
  TV-break break-V  
  TV-speak hang  

“Layers” in Huave verb structure: alternating zones of mobile and non-mobile affixes. Mobile affixes are found in Layers 1 and 3. Layer 2 consists of prefixes/suffixes occurring between Layers 1 and 3, and Layer 4 consists of prefixes/suffixes outside Layer 3. Within each layer there is still a fixed order of attachment.

Constituent structure is not obvious when affixes are on opposite sides of the root.

<table>
<thead>
<tr>
<th>L4</th>
<th>L3</th>
<th>L2</th>
<th>L1</th>
<th>Stem</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix</td>
<td>Mobile</td>
<td>Prefix</td>
<td>Mobile</td>
<td>Mobile</td>
<td>Suffix</td>
<td>Mobile</td>
<td>Suffix</td>
<td></td>
</tr>
</tbody>
</table>

But relative ordering is observable when two mobile affixes are on the same side of the root.
(14)  
\[2^{nd}\text{-intransitive } -r\ (2i) \text{ is inside (closer to the root than) } 2^{nd}\text{ person } & \text{ everything outside that}\]

\begin{tabular}{ll}
    a. Nonapparent: & m-e-wit-\_i-o_r \\
        & ‘that you (sg.) get up’ \\
        & t-e-wit-\_i-o_r \\
        & ‘you (sg.) get up’ \\
    b. More apparent: & m-e-\_r-u-ty \\
        & ‘that you (sg.) eat’ \\
        & t-e-\_r-u-ty \\
        & ‘you (sg.) ate’ \\
\end{tabular}

(15)  
\textbf{Completiive } -t\text{- and } 1^{st}\text{-subordinate } -n\text{- are inside first-person } -s/-x/-:

\begin{tabular}{ll}
    a. Nonapparent: & t-a-rang-\_a_s \\
        & ‘I did (it)’ \\
        & x-i-wit-\_i-o-n \\
        & ‘I will get up’ \\
    b. More apparent: & wit-i-o-t-u-s \\
        & ‘I got up’ \\
        & x-i-\_n-a-rang \\
        & ‘I will do (it)’ \\
    c. And: & ndil-i-\_t-ey-\_a_s \\
        & ‘I turned my head’ \\
        & ndil-i-\_n-ey-\_a_s \\
        & ‘that I turn my head’ \\
\end{tabular}

(16)  
Note in (14b) that first-person -s- is outside \textsc{fut} on the prefix side... 
while in (14c), it is outside \textsc{rfl} on the suffix side. Verb structure, schematically:

\[
\begin{array}{ccccccc}
    \text{[s} & \text{ FUT} & \ldots & \text{STEM} & \ldots & \text{RFL} & \text{s]} \\
    \text{L3} & \text{L2} & \text{L1} & \text{L1} & \text{L2} & \text{L3} \\
\end{array}
\]

(17)  
\textbf{Strategy: use the “fixed points” } \textsc{fut} \text{ and } \textsc{rfl} \text{ to divide the verb into zones, and group affixes.}

a. Layer 1 - affixes that are inside \textsc{fut} \text{ and } \textsc{rfl}

b. Layer 2 - fixed points \textsc{fut} \text{ and } \textsc{rfl}

c. Layer 3 - affixes that are outside \textsc{fut} \text{ and } \textsc{rfl}

(18)  
\textbf{Justifying Layer 1: All mobile affixes that are inside } \textsc{fut} \text{ when prefixal are also inside } \textsc{rfl} \text{ when suffixal.}  
\textsc{CPL } -t \text{- and } \textsc{fut} \text{ never cooccur, but we infer Layer 1 as } \textsc{cpl} \text{ is inside } \textsc{rfl} \text{ (17g).}

\begin{tabular}{cccccccc}
    [ \text{L3} & [ \text{L2} & [ \text{L1} & [\text{Stem} & \text{L1} & \text{L2} & \text{L3}]] & \text{]}} \\
    a. & x & i & n & a-u\_n & e & \text{‘I will go shopping’} \\
        & 1 & \text{FUT} & \text{1SB} & \text{TV-buy} & \text{RFL} \\
    b. & x & i & ndil-i & n & e & \text{‘I will turn around’} \\
        & 1 & \text{FUT} & \text{1SB} & \text{turn} & \text{RFL} \\
    c. & i & m & a-u\_n & e & \text{'s/he will buy (it) for self} \\
        & \text{FUT} & \text{SUB} & \text{TV-buy} & \text{RFL} \\
    d. & i & ndil-i & m & e & \text{‘s/he will turn around’} \\
        & \text{FUT} & \text{SUB} & \text{turn} & \text{RFL} \\
    e. & i & m-e-\_r & u-ty & \text{‘you (sg.) will eat’} \\
        & \text{FUT} & \text{SUB-2} & \text{2i-TV-eat} \\
    f. & i & m-e & ndil-i & r & e & \text{‘you (sg.) will turn around’} \\
        & \text{FUT} & \text{SUB-2} & \text{turn} & \text{2i} & \text{RFL} \\
    g. & ndil-i & t & ey & \text{as} & \text{‘I turned around’} \\
        & \text{turn} & \text{CPL} & \text{RFL} & \text{1}} \\
\end{tabular}
Layer 3 consists just of the mobile 1st Person affix -s-. It occurs outside all L1 and L2 affixes. Even where it does not cooccur with other affixes, we can now diagnose it as occupying an outer morphological slot.

\[
\begin{array}{ccccccc}
\text{[L3]} & \text{[L2]} & \text{[L1] [Stem]} & \text{L1} & \text{L2} & \text{L3} & \text{L4(a/b)} \\
\text{a.} & \text{a} & \text{[i-} & \text{n-} & \text{a-jch]} & \text{1 FUT 1SUB TV-give} & \text{1 PROG} \\
\text{b.} & \text{s-} & \text{[a-jch]} & \text{1 TV-give} & \text{1 PROG} \\
\text{c.} & \text{x-} & \text{[i-} & \text{chut-u} & \text{-n]} & \text{1 FUT sit-V 1SUB} & \text{1 PROG} \\
\text{d.} & \text{[t-} & \text{a-jch]} & \text{-ius} & \text{1 TV-give} & \text{1 PROG} \\
\text{e.} & \text{[t-} & \text{a-} & \text{xot} & \text{-ey]} & \text{as} & \text{1 TV-hide RFL 1 PROG} \\
\end{array}
\]

Layer 4 contains the non-cooccurring plural-marking suffixes...

\(\text{o} \ -n\) (default)
\(\text{o} \ -f/-w/-h/-O\) (3rd person; allomorphs due to productive phonological rules)
\(\text{o} \ -r\text{ and} -ts\) (1st inclusive, interchangeable)

... plus the progressive (PROG) prefix \text{ndyu-}-/dyu- (phonetically variable prenasalization)

\[
\begin{array}{ccccccc}
\text{[L4]} & \text{[L3]} & \text{[L2]} & \text{[L1] [Stem]} & \text{L1} & \text{L2} & \text{L3} & \text{L4} \\
\text{a.} & \text{[t-} & \text{a-ndiak} & \text{-as} & \text{-an} & \text{1 FUT 1PL TV-speak} & \text{1 PROG} \\
\text{b.} & \text{[t-} & \text{a-xum} & \text{-us} & \text{-uO} & \text{1 FUT 1PL TV-find} & \text{1 PROG} \\
\text{c.} & \text{[i-} & \text{m-} & \text{a-jaw} & \text{-ey} & \text{-ar} & \text{1 FUT 1INCL TV-see} & \text{1 PROG} \\
\text{d.} & \text{dyu-} & \text{s-} & \text{a-t} & \text{-ion} & \text{1 PROG TV-eat 1PL} & \text{1 PROG} \\
\end{array}
\]

Summary: Affixes occur in strict layer-order; distance from the root is morphologically specified.

<table>
<thead>
<tr>
<th>Prefixes</th>
<th>L0</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4(a/b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>ndyu- PROG</td>
</tr>
<tr>
<td>Suffixes</td>
<td>-(j)ch CAUS</td>
<td>[+rd] ITR</td>
<td>-e RFL</td>
<td>--</td>
<td>-rvn PASS</td>
</tr>
<tr>
<td>Mobile</td>
<td>--</td>
<td>i CPL m SB n 1SB n ST r 2I</td>
<td>--</td>
<td>s 1</td>
<td>--</td>
</tr>
</tbody>
</table>

Semantic or other principles behind the morphologically specified order await future research. But several aspects seem problematic for scopal or mirror-principle approaches, for example:

\(\text{o} \ 2\text{nd person in Layer 1 but} \ 1\text{st person in Layer 3}\)
\(\text{o} \ 2\text{nd person inflection in Layer 1 but Reflexive derivation in Layer 2}\)

\(^1\) The numbering of the first layer as “0” indicates the nonproductive status of the causative/transitivizing affix.
Morphologically conditioned phonology

(24) Vowel epenthesis with consonantal suffixes is common, since consonant clusters are not allowed. Epenthesis after V-final roots: *never with Layer 1 suffixes, always with Layer 3 and 4 suffixes.

(25) L1 L3
a. tye-m b. *tye-am c. t-a-tye-as d. *t-a-tye-s
   hang-SUB cPL-TV-hang-1
Stem-L1 L1-Stem-L3
‘that it hangs’

L1 L4
e. rra-t f. *rra-at g. a-sa-of h. *a-sa-f
dawn-CPL TV-tell-3PL
Stem-L1 Stem-L4
‘It dawned’ ‘they say, tell’

(26) Overapplication of diphthongization: variably with L3/L4 suffixes, (almost) never with L1 suffixes.

(27) Basic consonant inventory:

<table>
<thead>
<tr>
<th></th>
<th>Labial</th>
<th>Coronal</th>
<th>Velar</th>
<th>Labiovelar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stops</td>
<td>p</td>
<td>mb</td>
<td>t nd</td>
<td>k ng[ŋ]</td>
<td>kw ngw[ŋw]</td>
</tr>
<tr>
<td>Affricates</td>
<td>ts</td>
<td>nts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fricatives</td>
<td>f[ ]</td>
<td>s</td>
<td></td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>Nasals</td>
<td>m</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquids</td>
<td>l [r ]</td>
<td>rr[r ]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glides</td>
<td>w</td>
<td>j</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(28) All consonants come in plain and palatalized versions (/Cbcc/, /Cpal/)  
* Palatalization as secondary/abstract (no POA change): All non-coronals and rhotics
* Palatalization in inherent place: Non-rhotic coronals

<table>
<thead>
<tr>
<th></th>
<th>Plain</th>
<th>Palatal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
<td>ty [c]</td>
</tr>
<tr>
<td></td>
<td>nd</td>
<td>ndy [ ]</td>
</tr>
<tr>
<td></td>
<td>l</td>
<td>ly [ ]</td>
</tr>
<tr>
<td></td>
<td>ts</td>
<td>ch [ ]</td>
</tr>
<tr>
<td></td>
<td>nts</td>
<td>nch [ ]</td>
</tr>
<tr>
<td></td>
<td>s</td>
<td>x [ ]</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>h [ ]</td>
</tr>
</tbody>
</table>

(29) Surface vowels: monophthongs [i e a o u] and diphthongs (from underlying monophthongs)  
Diphthongs are observed where VC conflict in frontness/backness; the frontness/backness of the coda consonant is realized on the second half of the vowel nucleus.

Front monophthongs [i e]  
Rising diphthongs io [jo, jo] and ia [ja]

a. /kipi/  xip ‘mosquito’
   b. /peki/  pek ‘shoulder’

Central/Back monophthongs [a o u]  
Falling diphthongs ai oi ui [aj oj ul]

c. /pank/  pank ‘chair’
   d. /pek/  pek ‘pot’

f. /ndok/  ndok ‘fishing net’
   g. /xurk/  xur ‘pot’

(30) Since Huave disallows consonant clusters (e.g. *CVCCVC), codas only occur word-finally. Normally when suffixes are added, coda-C front/back features can be realized on a following vowel, the underlying monophthong surfaces.

a. /i-lak/  i-lakin ‘your tooth’
   2-tooth
b. /i-lak-in/  i-lak-ion ‘your (pl.) teeth’
   2-tooth-PL

c. /a-jir/  a-jir ‘has’
   TV-have
d. /a-jir-af/  a-jir-af ‘they have’
   TV-have-3PL
Optional overapplication:

a. /t-a-lang\iul-is/ → t-a-lang-iul  ~ t-a-lang-iul
   CP-TV-cross-1   CP-TV-cross-1
   ‘I crossed (the road)’

b. /t-a-chit-as/ → t-a-chit-as  ~ t-a-chit-as
   CP-TV-break-1   CP-TV-break-1
   ‘I broke (it)’

c. /t-a-jimb\iul-is-an/ → t-a-jimb-is-an  ~ t-a-jimb-is-an
   CP-TV-sweep-1-PL   CP-TV-sweep-1-PL
   ‘We (excl.) swept’

Can be seen as a cyclic effect: the environment obtains at inner levels (Stem/L1, L3).
At each level, there is an option to apply diphthongization, if the conditions are met; variation arises
from whether diphthongization applies “earlier,” or at the level of the whole word.

Such variation in application domain is predicted by the natural diachronic “life cycle” of
phonological processes (see e.g. Zec 1993).

Diphthongization never(?) overapplies in suffixing stems: even at stem level, conditions are not met.
(More data needed to confirm exactly how “bad” diphthongization is in this environment.)

Summary: Vowel epenthesis and diphthongization show that phonology can be sensitive to
morphological constituency; independently established morphological domains also seem to be referred to
in morphophonological processes.

The Stem + Suffix Domain

The processes discussed until now have only obtained in suffixal contexts, but their application cannot
really be tested in the morphologically corresponding prefixal domains.

- Vowel epenthesis: not attested with prefixes (though San Mateo del Mar dialect may have this)
- Diphthongization: no C-final prefixes, so no possibility for word-medial coda consonants

Two additional phonological processes show a more dramatic limitation to the stem + suffix domain,
where prefixes clearly provide the phonological environment - which however is ignored.

Vowel harmony: basic pattern

<table>
<thead>
<tr>
<th>Base -VC</th>
<th>Epenthetic V</th>
<th>Base -VC</th>
<th>Epenthetic V</th>
</tr>
</thead>
<tbody>
<tr>
<td>iC\iul</td>
<td>a</td>
<td>iC\iul</td>
<td>i</td>
</tr>
<tr>
<td>eC\iul</td>
<td>a</td>
<td>eC\iul</td>
<td>e</td>
</tr>
<tr>
<td>aC\iul</td>
<td>a</td>
<td>aC\iul</td>
<td>i</td>
</tr>
<tr>
<td>oC\iul</td>
<td>o</td>
<td>oC\iul</td>
<td>i</td>
</tr>
<tr>
<td>uC\iul</td>
<td>u</td>
<td>uC\iul</td>
<td>i</td>
</tr>
</tbody>
</table>
(38) Generalizations:
   a. Epenthetic V always matches the intervening C for [±back] – phonotactically driven
   b. Preceding vowel matters (=is copied) only if it also matches the intervening consonant for [±back]
   c. Otherwise, default epenthetic vowel is /a/ after C, and /i/ after C∗.

≡ “Sour grapes” (Padgett 1995): If you can’t copy, due to the phonotactics of [±back], pretend like you never wanted to propagate any features in the first place. Insert default vowel.

(39) Vowel harmony illustrations: Epenthetic vowel quality (1st person completive forms: tŋu-a-root-Vs₁)

\[
\begin{array}{lll}
\text{CVC root (Plain Cᵦ)} & \text{CVC root (Palatalized Cᵦ)} \\
\hline
\text{i} & \text{[t-a-mit-\text{gs}]} & \text{‘I buried (it)’} & \text{[t-a-xi-jp]\text{mb} \text{\text{gs}]} & \text{‘I bathed (it)’} \\
\text{e} & \text{[t-a-nde\text{-k-gs}]} & \text{‘I spoke (it)’} & \text{[t-a-re\text{jk}\text{mb} \text{\text{k-gs}]} & \text{‘I touched (it)’} \\
\text{u} & \text{[t-a-mu\text{-t-gs}]} & \text{‘I wrote (it)’} & \text{[t-a-un\text{mb} \text{\text{gs}]} & \text{‘I bought (it)’} \\
\text{o} & \text{[t-a-ndok-gs]} & \text{‘I fished (it)’} & \text{[t-a-kos\text{mb} \text{\text{gs}]} & \text{‘I scratched (it)’} \\
\text{a} & \text{[t-a-pal-gs]} & \text{‘I closed (it)’} & \text{[t-a-kal\text{mb} \text{\text{gs}]} & \text{‘I entered’} \\
\end{array}
\]

(40) So: epenthetic vowel quality depends on the preceding VC sequence.

However, in the case of single-consonant roots, the preceding V-C will span a prefix-root boundary. 2nd person plural forms (abstracting away from diphthongization):

\[
\begin{align*}
a. & /\text{mb}\text{bk}/ & \text{‘go’} & \text{t-e-mb-an} & \text{Expected default [bk] after V}_{\text{from,Cᵦ}}^\text{mb} \\
& & & \text{CPL-2-go-PL} \\
b. & /\text{jts}\text{mb}/ & \text{‘give’} & \text{m-e-jch-in} & \text{*m-e-jch-en} \\
& & & \text{SUB-2-give-PL} \\
c. & /\text{w}\text{mb}/ & \text{‘borrow’} & \text{t-e-w-in} & \text{*t-e-w-en} \\
& & & \text{CPL-2-borrow-PL} \\
\end{align*}
\]

(41) In (40bc), default front vowels are inserted, even though the environment for full vowel copy is met. It appears that vowel harmony cannot see leftward past the root.

(42) Laryngeal dissimilation: the second of two [+spread glottis] within a one-syllable window is deleted.

All voiceless fricatives are [+spread glottis]: /j [h], s, x [c], f [\text{\text{f}}]/

In these examples, passive alternations are produced by adding pre-root aspiration and depalatalizing the root coda. The pre-root aspiration causes a vowel aspiration in the root to disappear.

\[
\begin{align*}
a. & \text{a-naijp} & \text{TV-sell} & \text{‘S/he sells it’} \\
& & & \text{‘It is sold’} \\
b. & \text{a-j.nap} & \text{TV-be.sold} \\
c. & \text{a-paj} & \text{TV-call} & \text{‘S/he calls, yells’} \\
& & & \text{‘S/he was called’} \\
\end{align*}
\]

(43) The following examples show how the 3rd pl. suffix -\text{f} loses [+s.g.], but retains labiality, when following a root with [+s.g.].

\[
\begin{align*}
a. & \text{t-a-kaj-aw} & \text{CP-TV-look.for-3PL} & \text{‘they looked for (it)’} (3;41) \\
& & & \text{‘they folded (it)’} (3;46) \\
b. & \text{t-a-kor-n-iow} & \text{CP-TV-fold-3PL} \\
c. & \text{a-j-ch-iow} & \text{TV-give-3PL} & \text{‘they give’} (1;174) \\
& & & \text{‘their dogs’} (1;173) \\
d. & \text{mi-kius-aw} & \text{POS-dog-3PL} \\
e. & \text{t-a-xi-jp-io} & \text{CP-TV-bathe-3PL} & \text{‘they bathed’} (3;41) \\
& & & \text{‘they are throwing (it)’} (3;42) \\
f. & \text{duy-m-a-lox-iow} & \text{PROG-SB-TV-throw-3PL} \\
g. & \text{u-laj-aw} & \text{POS1-ear-3PL} & \text{‘their ears’} (1;173) \\
h. & \text{u-wix-iow} & \text{POS1-hand-3PL} & \text{‘their hands’} (1;173) \\
\end{align*}
\]
(44) Sibilants $s$ and $x$ trigger, as shown above, but do not undergo dissimilation.
   a. t-a-j.tyux CP-TV-rot ‘it rotted’
   b. t-a-najp-ius CP-TV-sell-1 ‘I sold it’
   c. piaj-u-s lie-TR-1 ‘I lie down’
   d. ty-u-paj-as CP-TV-yell-1 ‘I yelled’

(45) However, when $s$- is a prefix, it never triggers [+s.g.] deletion in the root.
    This cannot be a simple root-affix asymmetry, since suffixal $s$ (L3) triggers dissimilation in the 3PL -f.
   a. s-a-jch 1-TV-give ‘I give it’
   b. s-a-j.mba 1-TV-break ‘I break (it)’
   c. t-a-xum-us-uØ CPL-TV-1-3PL ‘I met them’

(46) Summary: Vowel harmony and laryngeal dissimilation cannot see past the stem to prefixes.
    Therefore the stem + suffixes constitute some kind of domain for the application of phonology.

Discussion

(47) How does the stem + suffix domain fit with the morphological picture developed earlier?
    It doesn’t: there is no morphological constituent boundary between the prefixes and stem.
    The phonological domain is defined linearly, but morphological constituents are symmetrical and hierarchical.

(48) Could the stem + suffixes be a Phonological Word?
    Problematic: neither prefixes nor stems always form independently valid phonological units.
    a. [s]-[a-jch] b. [m-e]-[jch]
       1-TV-give SUB-2-give
       L3-Stem L1-L1-Stem

(49) Possibilities: morphological symmetry has a diachronic basis but is synchronically an illusion (i.e.
    prefixes are morphologically separate domain); minimality on (48b) is assessed with a prefixal theme vowel
    that is later deleted; phonology can see morphology without being mediated by the Phonological Word.

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