1 Tibetan

Data

The following data is from Halle and Clements (1983).

\[
\begin{align*}
\text{d}_3\text{u} & \quad \text{‘ten’} \\
\text{d}_3\text{g} & \quad \text{‘one’} \\
\text{d}_3\text{ugd}_3\text{g} & \quad \text{‘eleven’} \\
\text{f}_1 & \quad \text{‘four’} \\
\text{d}_3\text{ubf}_1 & \quad \text{‘fourteen’} \\
\text{f}_1\text{bd}_3\text{u} & \quad \text{‘forty’} \\
\text{g}_1 & \quad \text{‘nine’} \\
\text{d}_3\text{urgu} & \quad \text{‘nineteen’} \\
\text{g}_1\text{bd}_3\text{u} & \quad \text{‘ninety’} \\
\eta a & \quad \text{‘five’} \\
\text{d}_3\eta a & \quad \text{‘fifteen’} \\
\eta abd_3\text{u} & \quad \text{‘fifty’}
\end{align*}
\]

Directions

Provide an OT account of the Tibetan data that covers the following points. This should be a short paper. Make sure you:

- Describe in words any alternations you see.
- Explain the morpheme order. How does Tibetan form teen (X+10) and ty (X * 10) numbers?
- Give the underlying form for each morpheme (ten, one, four, nine, five).
- Say which markedness constraint(s) force(s) the alternations you observe.
• Think of various other ways that the markedness constraints could have been satisfied and say which faithfulness constraint(s) would be violated in those cases. You may find it helpful to use MAX-C/\_\_\_V (“don’t delete a C that was underlyingly prevocalic”)

• Argue for constraint rankings using mini tableaux.

• Give summary tableaux for at least one plain numeral (10, 1, 4, 9, or 5), one -teen numeral (11, 14, 19, or 15), and one -ty numeral (40, 90, or 50).
2 Alignment and -um- infixation in Tagalog

ALIGN constraints are another commonly used constraint type OT. Here we will see how they have been used to explain why, in some languages, certain morphemes appear as infixes in some words, but as prefixes in other words. For example, in Tagalog (from Kager 1999):

\[
\begin{align*}
/\text{um} + \text{alis}/ & \quad \text{umalis} \quad \text{‘leave’} \\
/\text{um}+\text{tawag}/ & \quad \text{tumawag} \quad \text{‘call, pf., actor trigger’} \\
/\text{um}+\text{gradwet}/ & \quad \text{grumadwet} \quad \text{‘graduate’}
\end{align*}
\]

This can be analyzed with an alignment constraint

\[
\text{ALIGN(} um, L, \text{Word}, L \text{)} \quad \text{One violation for each segment separating the left edge of} \text{ um from the left edge of the word.}
\]

Rank this constraint with ONSET and NOCODA (and any other constraints you may need) to account for the position of the affix -um- in the Tagalog words above. Is there anything appealing about your analysis (consider how the affix position would be determined in a rule-based system). Is there anything unappealing about this analysis?
3 Syllable Structure

These typological facts come from Blevins (1996).

<table>
<thead>
<tr>
<th>Language(s)</th>
<th>Onsets</th>
<th>Codas</th>
<th>Possible Syllables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabela, Siona, Piro, Hua</td>
<td>required</td>
<td>forbidden</td>
<td>CV</td>
</tr>
<tr>
<td>Totonac, Klamath, Nisqually, Tunica, Sedang, Dakota, Thargari</td>
<td>required</td>
<td>allowed, but not required</td>
<td>CV, CVC</td>
</tr>
<tr>
<td>Pirahã, Mazateco, Fijian, Cayuvava</td>
<td>allowed, but not required</td>
<td>forbidden</td>
<td>V, CV</td>
</tr>
<tr>
<td>English, Gilyak, Finnish, Tamazigh Berber, Cairene Arabic, Spanish, Italian, Mokilese, Cuna</td>
<td>allowed, but not required</td>
<td>allowed, but not required</td>
<td>V, CV, VC, CVC</td>
</tr>
</tbody>
</table>

Let the UR alphabet be \{C,V\}. Let the SR alphabet be \{C,V,\}. The dot ‘.’ represents the syllable boundary. Consider the following four constraints.

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONSET</td>
<td>One violation for each onsetless syllable.</td>
</tr>
<tr>
<td>NOCODA</td>
<td>One violation for each syllable with coda.</td>
</tr>
<tr>
<td>MAX</td>
<td>One violation for each segment in UR with no SR correspondant.</td>
</tr>
<tr>
<td>DEP</td>
<td>One violation for each segment in SR with no UR correspondant.</td>
</tr>
</tbody>
</table>

1. Pick two rankings of these constraints, and provide tableaux for underlying forms /CV/, /V/, and /CVC/, showing their winners and some rival candidates. Which of the above language types do your rankings correspond to, if any?

2. What hypothetical language types are missing from this typology?

3. Explain why, with these four constraints, underlying /V/ never surfaces as /VC/. 

Note that if we add the constraints *COMPLEX, *COMPLEXCODA, and *COMPLEXONSET, the typology becomes larger.