**Basehood**

For at least some cases of IN, frequency in addition to morphology must play a role in determining basehood (Benua 1997, Steriade 2013; c.f. Albright 2002):

- A candidate’s base takes the form of the most frequent type within its inflectional paradigm. E.g.: assuming that the most frequent type of inflection in English nouns is the (phonologically null) singular, the base of *penguins* is the singular *penguin*. Similarly, the base of a nonce noun is the nonce noun root plus singular inflectional morphology.

- We largely adopt Recursive Evaluation of bases (Benua 1997): at speech time, the speaker first determines the base UR as above, then applies the language’s canonical phonology and phonetics to that form. The candidate is then evaluated with respect to this freshly-minted base.

- This view neatly accounts for PU effects in nonce words: the speaker need only apply canonical phonology and phonetics to the nonce base; no word-specific frequency information is needed since type frequency is computed over entire inflectional paradigms. The alternative view, in which the phonetic detail of bases is pre-generated, is problematic since nonce words (by virtue of never having been heard by the speaker) are not associated with phonetic details.

- Morpheme-internal IN: a word like English *ladder* serves as its own base after canonical phonology and phonetics have applied. This does, though, crucially assume that flapping is not part of the *canon*. (On faithfulness to “canonical” or “phonetically natural” forms see Steriade 1997:55 and Kawahara 2002.)

We do not assume that this model of basehood applies in all situations. For example, classical Benua-style morphological simplicity may be at play in, e.g., IN of German final devoicing where in nouns like *penguins*.

**References:**

Modeling Incomplete Neutralization
Paradigm Uniformity and a Phonetics with Weighted Constraints

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Introduction

- Incomplete neutralization (IN): Two underlyingly distinct segments become nearly identical on the surface ([9],[16]).
- Challenge for classical architectures (e.g., [3],[7]): IN creates sub-phonemic distinctions, which require reference to UR contrasts unavailable to phonetics.
- We combine two independently motivated mechanisms—paradigm uniformity ([2],[19]) and weighted phonetic constraints ([8],[14],[23])—to account for IN patterns.

Two Generalizations

- PU operates at the level of phonetic implementation, allowing for sub-phonemic changes ([19],[21]).
- For at least some cases of IN, frequency plays a role in determining basehood along with morphology ([2],[20], cf. [1]). [See handout for details]

Weighted Phonetic Constraints

- We use a phonetic grammar whose constraints refer to raw phonetic details ([8]). Exemplar models ([13],[15],[22]) highlight the tradeoff between neutralization and identity to related forms; we formalize this tradeoff using weighted constraints.

IN of Japanese Vowel Length

- Japanese monomoraic nouns lengthen to meet a bimoraicity requirement ([11],[17]), but these lengthened nouns are shorter than underlyingly long nouns ([5]).
- Schematic example (values rounded):

```
Example  Mean Dur.
(a) Unlengthened (short)  [ki] nakushita yo  50 ms.
(b) Lengthened (/short/)  [ki Ø] nakushita yo 125 ms.
(c) Long (/long/)  [kii Ø] nakushita yo 150 ms.
```

Bimoraic vowels approximate target duration: $\text{DUR}(\mu)$ cost: $w_\mu(\text{TargetDur}(\mu) – \text{Dur}(\text{Cand}))^2$

Candidate durations approximate base duration: $\text{OO-ID-DUR}(\mu)$ cost: $w_\mu(\text{Dur}(\text{Cand}) – \text{Dur}(\text{Base}))^2$

For $w_\mu = 3$ and $w_\mu = 1$:

<table>
<thead>
<tr>
<th>Lengthened Vowel Duration</th>
<th>Cost of OO-ID-Dur(μ)</th>
<th>Cost of Dur(μ)</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) 100</td>
<td>1(100–50)</td>
<td>3(150–100)</td>
<td>10,000</td>
</tr>
<tr>
<td>(b) 125</td>
<td>1(125–50)</td>
<td>3(150–125)</td>
<td>7500</td>
</tr>
<tr>
<td>(c) 150</td>
<td>1(150–50)</td>
<td>3(150–150)</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Discussion

Two individually motivated mechanisms account for both Directionality and the Magnitude Continuum. Lengthened vowels cannot become longer than underlyingly long vowels since no weightings prefer this situation. With appropriate weightings, the model can account for a wide range of durations.