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Testing Parameters for Stress Placement: The Case of Dissyllabic Prefixed Verb/Noun Pairs

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Background

The parameters regulating English stress are not consensus, particularly in the case of verb prefixes. However, Descloux et al. (2010) showed that it is actually a decisive factor for stress placement in verbs as they are nearly never stressed on their prefixes, unlike nouns.

Dissyllabic prefixed verb/noun pairs present an intriguing stress behaviour which can be divided into three types:
- **Verbal**: V/01 and N/01, e.g. control ≤ 60%
- **Alternating**: V/01 and N/10, e.g. record ≤ 30%
- **Nominal**: V/10 and N/01, e.g. access ≤ 10%

but there is no definite account of their distribution.

Aim:

Test out different parameters to try and explain what makes a pair belong to one of these three types.

Relative Frequency

**Does stress type depend on relative frequency?**

- The relative share of the nominal type increases as nominal frequency increases, which seems to confirm the hypothesis.
- However, the verbal type distribution contradicts this first impression: except when nominal relative frequency is high, the share of the verbal type does not vary according to verbal relative frequency.
- The alternating type curve does not confirm the hypothesis either, but is also quite intriguing: why would nouns, failing to force their pattern on relatively more frequent verbs, would at the same time develop a growing resistance to stress shift? We have no suggestion so far.

Conversion

Relative Frequency

\[ f_v < f_n \]

**Segmental hypotheses**

**Vowel reduction hypothesis**

Does a full vowel in the unstressed syllable imply an alternating type?

Alternating Type: the nouns seem to confirm the hypothesis: close to 100% have a full vowel in their unstressed syllable (85% with a full vowel only + 11% with a full vowel as first pronunciation).

But the verbs disprove the hypothesis: only 30% have a full vowel, of which 30% as a secondary variant only.

This is confirmed by the nominal type: although 50% of the words only have a full vowel, they do not entail a stress type.

Then, is the difference of full vowels proportion due to the difference of category: nouns would favour full unstressed vowels, and verbs reduced unstressed vowels?

The answer is no: when both the noun and the verb have the same stress pattern (verbal and nominal stress types), their behaviour is strictly identical.

What the graphs show is actually a difference between the first and the second syllable: indeed the verbal type and verbs in the alternating type are stressed on their second syllable, while the nominal type and nouns in the alternating type are stressed on their first syllable. It seems that this difference is probably due to the morphological opposition between prefixes and roots.

This study led us to formulate two hypothesis based on two observations:

- **Morphological Hypothesis**: we observe that vowel reduction is considerably higher on the prefixes than on the bases and thus that all different morphological units may not be equal with regards to reduction, i.e. prefixes tend to reduce more than bases (similar behaviour found by Guérin in pretonic monosyllabic prefixes followed by C1, 1978: 253).
- **Vowel Preservation Hypothesis**: we observe that vowels tend to reduce less in the alternating type, which leads us to think that it is the existence of a full vowel in the co-member of the pair which reduces the chances of vowel reduction for that same vowel in the other co-member of the pair. This observation could be compared to “stress preservation” effects, as described by Collie (2007).

These two hypotheses will need to be tested on larger corpora in further studies.

Further observations

**Dates**

**Does stress type depend on the earlier date of appearance of one member of the pair?** (significant difference used: 50 years)

<table>
<thead>
<tr>
<th></th>
<th>N-V</th>
<th>N-V</th>
<th>V-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbal</td>
<td>52%</td>
<td>65%</td>
<td>48%</td>
</tr>
<tr>
<td>nominal</td>
<td>27%</td>
<td>24%</td>
<td>27%</td>
</tr>
<tr>
<td>alternating</td>
<td>21%</td>
<td>11%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Verbal type: the verbs appeared first in 69% of the cases. Nominal type: the nouns appeared first in 86% of the cases. Surprisingly, 73% of alternating pairs have V-N (and contrary to expectations, the proportion of unusable data is lower in both types).

**Final syllable weight hypothesis**

**Does a heavy final syllable imply more late stressing?**

<table>
<thead>
<tr>
<th></th>
<th>Vc</th>
<th>Vc</th>
<th>V</th>
<th>Vc</th>
<th>Vc</th>
</tr>
</thead>
<tbody>
<tr>
<td>verbal</td>
<td>6</td>
<td>24</td>
<td>10</td>
<td>60</td>
<td>11</td>
</tr>
<tr>
<td>alternating</td>
<td>3</td>
<td>19</td>
<td>3</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>nominal</td>
<td>12</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

There seems to be a correlation between the weight of the final syllable and the stress type of the pairs: the heavier the final syllable, the more predominant the verbal type.

A long vowel (V) in the final syllable is most often associated with late stressing. The number of consonants in the coda does not seem to play a significant role in this context.

**Corpus**

- Historically prefixed pairs
- COCAE frequency of Verb and Noun superior to 0.5 per 1 million.
- Removal of unclear and/or heterogeneous cases:
  - Mixed frequencies (homonyms): abstract, second...
  - Semantically separable structures: oblivie, reprint...
  - Mixed category status of the first element: bypass, download...

168 dissyllabic prefixed verb/noun pairs

Further considerations

Massive domination of the verbal model amongst dissyllabic prefixed units:

<table>
<thead>
<tr>
<th>Nouns</th>
<th>Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>/10/</td>
<td>347</td>
</tr>
<tr>
<td>Prefix</td>
<td>425 (9%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nouns</th>
<th>Verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>/01/</td>
<td>78 (19%)</td>
</tr>
<tr>
<td>Non-prefix</td>
<td>4416 (91%)</td>
</tr>
</tbody>
</table>

Guérin (1970) data: monosyllabic dissyllables, compounds not included.

Image 1: www.rogue.org.uk/2014/07/dissyllabic.html


