Where is the Dutch stress system?

Marc van Oostendorp and Björn Köhnlein

Leiden University and Meertens Instituut

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“Perhaps Stresstyp should give a score from 1 to 5, indicating the reliability of a stress or accent analysis, giving a point for such criteria as

- two or more independent, converging studies
- multiple arguments for the analysis
- instrumental validation

English would get a 5 by any measure!”

(Hyman, this conference)
Where is the Dutch stress system?

- Dutch would get at least a 4.9 given the large number of great minds that have worked on it, the experimental work, etc.
- So, what do we know about the Dutch stress system?
- What counts as evidence?
Where is the Dutch stress system?

- There is a rather large literature on the Dutch stress system (e.g. Van der Hulst 1984, Trommelen and Zonneveld 1989, Kager 1989, Van Oostendorp 1997, Gussenhoven 2009, 2014).
- The system proposed in this literature is usually rather complex (=does not fit on anybody’s thumb nail), involving many factors, regularities and subregularities.
- It is basically the same as the German system, and similar to the English system.
Evaluation of the system

- The Dutch system is usually considered to be partially a lexical system, but subject to subregularities.
- However, most of the literature is based on the existence of actual words.
- The question for this talk is to what extent these regularities are ‘real’, i.e. part of the knowledge a native speaker has.
Problems with taking actual words

- The set of actual words in the language is influenced by many factors which might not all be part of the speakers’ “knowledge”
- but rather the result of contingencies in the history of the language involved (loanwords), etc.
- We know from the study of (mostly) phonotactics that not every statistic generalization about the actual lexicon is also reflected in the behaviour of speakers.
Data

We test the predictions of existing theories against new data, from two online experiments:

- biblical names (1,774 participants, 2,000 names; conducted 2012)
- (mostly) nonsense words (1,631 participants, 461 words; conducted 2013-14)

In both cases, participants were shown a written word and asked to mark which syllable they would stress.
Main generalisations

There seems to be consensus on the following:

- Dutch has a three-syllable window at the end of the word.
- Stress is (partly) quantity-sensitive.
- Default stress is on the penultimate syllable.
- Dutch stress is partly lexically specified, although the ‘functional load’ is not very large.
Where is the Dutch stress system?

Three-syllable window

Three-syllable window

- Usually, Dutch stress is supposed to be subjected to a three-syllable window at the end of the word.
- The evidence for this is that words like *[mákaroni] are almost absent from Dutch (Gussenhoven 2014 claims that this is an ‘impossible’ exception).
Where is the Dutch stress system?

Three-syllable window

Problems

- The only evidence we have is ‘static’ evidence; alternations are missing (e.g. Greek: *gón dola* ‘gondola’ - *gondolá-mu*)
- Such static evidence comes from loanwords, from languages which themselves respect the three-syllable window
- Two known classes of exceptions: (i) *infinitief, accusatief, nominatief,*... (ii) *Scheveningen, Wageningen,* ... (place names)
- Furthermore (CELEX): *reutemeteut, tingeltangel, erlenmeyer, ammelaken*
Where is the Dutch stress system?

- Three-syllable window

Data from our experiment

Four syllable words:
Data from Nouveau (1994)

Error rates in position of stress for three-year old children

<table>
<thead>
<tr>
<th></th>
<th>PAPU</th>
<th>APU</th>
<th>PU</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>karabilo</td>
<td>65</td>
<td>30</td>
<td>20</td>
<td>65</td>
</tr>
<tr>
<td>monitaron</td>
<td>50</td>
<td>35</td>
<td>45</td>
<td>55</td>
</tr>
</tbody>
</table>
Where is the Dutch stress system?

Three-syllable window

The option of (fake) compounds

- Here is a word where the largest number of participants (29.8%) chose stress on the initial syllable: *zeiboltiroon*

- It is possible that forms such as these are not ‘monomorphemic’ but as compounds (e.g. *zeibol*tiroon, with compound stress on the first element, as is usual in Dutch (nominal) compounds.

- This makes the whole idea of a window also virtually untestable: if speakers assume that there basically are no monomorphemic words with more than three syllables, why would they posit some constraint on stress placement in such words
We conclude that there is no evidence for a three-syllable window in Dutch beyond the fact that many Dutch words happen not to have stress on the PAPU or an even earlier syllable.

Note that final stress is almost as marked as PAPU stress.
Where is the Dutch stress system?

Penultimate default

- ‘Default’ stress is supposed to be on the PU syllable.
- APU stress is supposed to be more marked, and U stress more marked still.
- Evidence comes from lexical distribution, but also from regularizations (nóitulen > notúlen and not the other way around).
Where is the Dutch stress system?

Penultimate default

Our data
(words ending in three light syllables)
Where is the Dutch stress system?

Penultimate default

The pattern is stronger than in CELEX
(trisyllabic words with only light syllables)
Where is the Dutch stress system?

Weight

We probably have to make (at least) a four way distinction of syllable type:

- Schwa
- Light (open, full vowel)
- Heavy (closed, full vowel)
- Superheavy (lax vowel plus one consonant, tense vowel plus two consonants)
Schwa

- Stress immediately precedes the schwa syllable (Van der Hulst 1984).
- Exceptions:
  - (according to Van der Hulst): Manchester, armoede, Nijmegen, weduwe, oorkonde, Betuwe, Veluwe
  - (CELEX): maluwe, clitoris, syfilis, cannabis, sauriër
- There is strong evidence for the relation between schwa and stress: (optional) reduction
- This therefore seems a ‘real’ fact of phonology
- Given our methodology we could not test this further (no special symbol for schwa in Dutch orthography)
Where is the Dutch stress system?

Weight

Superheavy

- Stress tends to fall on (final) superheavy syllables.
- Exceptions: *kroepoek, lichaam, arbeid, vampier, nonsens, ambacht, asbest*
- These have been analysed of ‘prosodic compounds’ with two cranberry morphemes
Data

(bisyllabic words; SH=superheavyy, A=light, H=heavy)

<table>
<thead>
<tr>
<th>Syllable</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-SH</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>45.4</td>
</tr>
<tr>
<td>2</td>
<td>54.6</td>
</tr>
<tr>
<td>A-A</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.9</td>
</tr>
<tr>
<td>2</td>
<td>94.1</td>
</tr>
<tr>
<td>hline A-H</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>57.5</td>
</tr>
<tr>
<td>2</td>
<td>42.5</td>
</tr>
</tbody>
</table>

The tendency to stress the final syllable is seen mostly in the way it counterbalances the preference for a trochee. It is not clear that superheavy has a much stronger effect than heavy.
This effect is stronger in CELEX
(Words of type heavy-light-superheavy; 19 examples in CELEX)
Where is the Dutch stress system?

Weight

Heavy-light

- We count as heavy all closed syllables or diphthongs, and as light all open syllables
- There is one twist, since it is sometimes thought that vowels in open syllables are ‘long’
- Key generalisation: When the penultimate syllable is heavy, stress cannot be on the antepenultimate.
Where is the Dutch stress system?

Weight

Exceptions

(CELEX) ’VC. VC. VC mangistan, badminton
’VC. VC. VV chimpanzee
’VV.VC.VV shoarma
(VC).’VV.VC.VC sanniyasín

Note: The latter two examples seem rather questionable; we have not found people that share this stress.
More generalizations from the literature

- **Main generalization**: Only the weight of the last two syllables count.
- If penult is closed, it will be stressed.
- If ultimate is closed and penult is open, antepenultimate will have stress.
- If ultimate is open and penult is open, penult will have stress.
If penult is closed, it will be stressed

This seems to hold (as a tendency).
Where is the Dutch stress system?

V-VX: antpenultimate stress

This seems to be a weak tendency.
Where is the Dutch stress system?

V-V: penultimate stress

This is a rather strong effect.
Also weight of antepenultimate syllable is relevant

Weight effects thus are NOT confined to the last two syllables.
Where is the Dutch stress system?

- Weight

But weight of preantepenultimate syllable is not!
Interim summary

- The data seem to show that speakers have access to the antepenultimate default and (more subtly) to weight considerations (pace Van Oostendorp 2012)
- There is no evidence for the three syllable window or for some of the more precise predictions of stress-theories
- However, none of the factors on their own seem to make absolute predictions as to where stress goes
What knowledge is that?

- In unpublished work, Hayes and Cei look at data from the (somewhat similar) system of Italian.
- They propose a system of stochastic OT which models those data fairly well: a set of constraints with some probability attached to them.
So, what knowledge is that?

- The question now is: why would people possess this type of knowledge?
- Grammatical knowledge typically helps the learner create new forms
- That does not apply here: our experiment creates a very exceptional situation
- So why do we have this knowledge at all?
Classical answer: TETU

- A classical OT answer (incompatible with Hayes and Cei) is: this is TETU
- All constraints are available in all grammars, so also in these grammars, even though they are masked by faithfulness
- In cases like these, they show their effect
- Maybe some of the variability can be attributed to the fact that there is little evidence to set the rankings properly
Discussion

Parsing?

- One could also entertain the possibility that maybe this somehow helps the listener parse the incoming string.
- But given the variability of stress position, stress is not a very good boundary marker in Dutch (especially given that apparently we do not like words to be longer than three syllables).
- Also, the interaction with syllable weight does not really help.
An extra puzzle

- Given the fact that these choices are stochastic, the question also arises: Why are there absolutely no words with no stress? Or with more than one main (non-compound) stress?
- For in Hyman this is part of the definition of what it means to be a stress system.
- It looks as if stress is a real ‘macroparameter’ (switched on or off, no ‘violable constraint’, no ‘TETU effects’)
- Gussenhoven (2014) says that the constraint ‘that ensures that all words have main stress’ is undominated, and that he does not consider it.
Stress as a word class marker

▶ Suggestion: stress behaves as a word class marker, just like e.g. theme vowels
▶ In e.g. Romance, gender is partially predictable based on theme vowels (words in -o tend to be masculine)
▶ In a similar way, one could argue, Dutch words with a heavy penult tend to have stress on the first syllable
▶ This does not solve the problem of why there is a stress system, but reduces it to another problem: why are there word classes?