Germanic inflection wants to be empty

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Central thesis

- Inflectional endings (in West-Germanic) desire to be phonologically minimal, since in this way they maximally satisfy mirroring requirements on the phonology-morphology interface. In particular, Limburgian tone-morphology interaction can be understood in this way.
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Morphological mirroring
  Basic assumptions
  Inflectional suffixes
  Diachrony
  The teleology of erosion

The case of Limburg Dutch
  Data
  Interaction between tone and intonation
  Tone and inflection
  Analysis
  Conclusions
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- One ‘function’ of phonological structure is to express morphological structure.
- Two important ways of doing this:
  - ‘Alignment’: edges of phonological constituents correspond to edges of morphological constituents
  - Head reflection: morphological heads should be expressed by phonological heads and vice versa
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Headedness

- Phonological and morphological constituents are always headed.
- The morphological head is the morpheme which specifies the category (contra minimalism/DM).
- The phonological head is the most prominent element (vowel in the syllable, stressed syllable in the foot, main stressed foot in the word)
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- Are insensitive to stress
- Resyllabify (if they are vowel-initial)
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Dutch word stress displays quite some lexical variation, but there is also a system restricting the variation.

A few virtually inviolable constraints:

- If the final vowel is schwa, stress is on the penultimate ([oránjə, *órganjə] ‘orange’)
- If the final syllable is superheavy, it bears stress ([olifənt, *ólfənt, *olfənt] ‘orange’)

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Inflection is invisible to stress

- In inflected forms we find exceptions to both generalisations:
  - [átlasə] ‘atlasses’ (*[atlásə], from [átlus])
  - [ánvāŋt] ‘start (3S)’ (*[ánvāŋt], from [ánvāŋ])

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Segmental structure of inflection

- Inflectional suffixes (as well as most function words) are composed of segments in the following inventory: [t, s, n, r, ə]
The difference between derivation and inflection

- The idea: phonological structure needs to mirror this difference.
The difference between derivation and inflection
Phonologically adjoined positions

- Assume that marked material needs to be licensed by being in a constituent.
- Material adjoined to X, does not really count as being dominated by X ($\alpha$ is dominated by $\beta \iff \alpha$ is dominated by every segment of $\beta$)
- If stress constituents need to be dominated by $\omega$ (or by N, V, A), stress behaviour follows.
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Segmental emptiness

- If segmental material needs to be dominated by $\omega$ (or by N, V, A), unmarkedness follows.

- Constraints of the following type:
  - $\text{WORD}(F)$: A phonological feature $F$ can only occur inside a word.

- Assuming that features $F$ are somehow arranged in an order of relative markedness (e.g. coronal $\prec$ labial, velar) or some form of monovalency, we get the required result.

- If we also assume $\text{WORD}(\pm\text{consonantal})$, $\text{WORD}(\pm\text{sonorant})$, etc., we predict complete emptiness as the ultimate goal. ($\Rightarrow$ section 3)
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• Constraints of the following type:
  • WORD(F): A phonological feature F can only occur inside a word.

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• If we also assume WORD(±consonantal), WORD(±sonorant), etc., we predict complete emptiness as the ultimate goal. ($\Rightarrow$ section 3)
One potential problem

- The past tense suffix sometimes contains a voiced [d]. [+voice] can hardly be considered unmarked.
  - However, it can be assumed that this suffix is underlingly -/tə/, voicing is shared with the preceding stem (which needs to have a voiced segment underlingly):
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- *ik leef* ‘I live’ - *ik leevdə* ‘I lived’
- However, it can be assumed that this suffix is underlingly -/tə/, voicing is shared with the preceding stem (which needs to have a voiced segment underlingly):
Structure of \textit{leefde}

- [+voice] is properly dominated by V; the fact that it also occurs outside, is irrelevant.
- This also explains why in this case we have progressive assimilation of voicing.
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Direction of voicing

- Usually voicing is in the opposite direction, e.g. in the nominalizing suffix -te:
  - *stijf-te* ‘stiffness’ from /stɛiv/ ‘stiff’
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Erosion

- It is well known that inflection has been in a state of diachronic ‘erosion’ in West-Germanic, where Dutch is somewhere between English and German
- *saiwala - saiwalos* (‘soul - souls’, in Gothic) - *ziel- zielen* (in Dutch)
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The structure of Gothic *saiwalos*

- It is not possible to give this form a perfect structure under the assumptions given here.
- Observe that already in Gothic most inflectional endings contained coronals.
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Lexical diffusion

- Either we have an imperfect match of morphological and phonological structure, or we allow marked features in adjoined position (i.e. violation of \textsc{Word}([+round]).
- Assume \textsc{Ident}([+round]) \gg \textsc{Word}([+round]) in Early Germanic (as in Gothic)
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Gothic tableau

<table>
<thead>
<tr>
<th>saiwal + os</th>
<th>IDENT- [+round]</th>
<th>WORD([+round])</th>
</tr>
</thead>
<tbody>
<tr>
<td>saiwalos</td>
<td>*</td>
<td></td>
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<td>saiwaløs</td>
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- *saiwalos* wins. However, it is not perfect (it violated the markedness constraint). Hence, there will be always some attraction to positing the underlying shape -øs (for instance for the language learner)
## Post-Gothic tableau

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- Now the winning form is perfect.
- Notice that at some point after this, the order IDENT-[+round] $\gg$ WORD([+round]) will be no longer detectable for the child.
- Who will then assume unmarked M $\gg$ F — i.e. WORD([+round]) $\gg$ IDENT-[+round]: language change completed.
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The ultimate goal

- The optimal structure for inflection should have as few features as possible.
- However, if inflection does not get any phonological expression at all, we would get the following:

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N
 / \
N atlas
    \
∅
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The ultimate goal (2)

- There are two options:
  - morphological structure needs to go, or
  - we need a phonological object which does not have features. For instance, an empty syllabic position:
    \[ \text{N} \rightarrow \text{N} \rightarrow \text{atlas} \rightarrow \sigma \]
  - The first has possibly happened (e.g. in English adjectives), but the latter seems more interesting.
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Almost empty inflection

- Almost empty inflection abounds in West-Germanic dialects. Arguably, any inflectional element is sometimes expressed as an empty syllable head.
- We concentrate on Dutch dialects, and on first person singular of verbs and singular/plural of nouns; similar points can also be made about adjectives, however.
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First Person Singular

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- After having been deleted (ik leef ‘I live’), this ending still left traces all over the place.
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First Person Singular in Standard Dutch

- **tegen** ‘against’ (P) [teɣə / teɣən]
- **open** ‘open’ (A) [opə / opən]
- **teken** ‘sign’ (N) [tekə / tekən]
- **teken+en** ‘to draw’ (V+INFINITIVE) [tekənə / tekənən]
- **ik teken** ‘I draw’ [ik *tekə / tekən]
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Brussels Dutch: ‘k-insertion’

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  [puliŋk] ‘eel’  [puliŋə] ‘eels’
  [γaŋk] ‘corridor’  [γaŋə] ‘corridors’

- First person singular
  - *ik hang* ‘I am hanging’ [ikɔŋ]
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Brussels Dutch: lenition

- *kleden* ‘to dress’ [klejə]
- *hij kleeit hem* ‘he dresses himself’ [a+klət+əm] (shortening)
- *ik klee mijs* ‘I dress myself’ [ik+klej+ma]
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Twente Dutch

- *ik geleuv* ‘I believe’ [ɪk ɣəløv]
Stellingwerven Dutch

- ıg bʌt ə ŋ ɻiːrə
  I offer also a time
  ‘I also made one offer’

- ıg buː ə ŋ ɻiːrə

- hɛj də ɦuːt əl əp
  have-you the hat already on
  ‘Are you already wearing your hat?’

- *hɛj də ɦuːt əp
Stellingwerven Dutch

- "Ig bət ok ę kixeř"
  I offer also a time
  ‘I also made one offer’

- "Ig bəp ok ę kixeř"

- "Hɛj dɛ huxt əl op"
  have-you the hat already on
  ‘Are you already wearing your hat?’

- "*Hɛj dɛ hux pəl op"
Stellingwerven Dutch

- Ig båt ok ŋ kï:mř
  I offer also a time
  ‘I also made one offer’

- Ig båd ok ŋ kï:mř

- hëj dĕ hü:t ál op
  have-you the hat already on
  ‘Are you already wearing your hat?’

- *hëj dĕ hüi pë hë hë në
Stellingwerven Dutch

- \( \text{ig bət ok ŋ kɪɛr} \)
  I offer also a time
  ‘I also made one offer’

- \( \text{ɪg bəd ok ŋ kɪɛr} \)

- \( \text{hɛj də hɥt də l̠ op} \)
  have-you the hat already on
  ‘Are you already wearing your hat?’

- \( *\text{hɛj də hɥt də l̠ op} \)
First Person Singular: Conclusion

- Even though the first person singular seems to have gone in most varieties of Dutch, on closer inspection, it has left a trace, in the form of an empty (featureless) position.
Germanic inflection wants to be empty

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The tonal contrasts in Limburgian dialects

(Gussenhoven 1999)

| [wáːtər] | ‘water’ | [páːtər] | ‘father (clerical)’ |
| [móːdər] | ‘mother’ | [móːdə] | ‘fashion’ |
| [míːn] | ‘my, neuter’ | [mîːn] | ‘coal mine’ |
| [rêːt] | ‘crevice’ | [rêːt] | ‘reed’ |
| [kâːl] | ‘nonsense’ | [kâːl] | ‘to talk’ |
| [máːn] | ‘man’ | [pâːn] | ‘pan’ |
Invisibility of stress outside intonational peak

[mine va:der heltj von mO:der]  ‘my dad loves mother’
[mine va:der heltj von mO:de]  ‘my dad loves fashion’
[mine pater heltj von mO:der]  ‘my father (cler.) loves mother’
[mine pater heltj von mO:de]  ‘my father (cler.) loves fashion’
Autosegmental representation

H H level high tone
m o : də
H L falling tone
m o : də

The tone of the first mora of the prominent syllable is also determined by intonation; in declarative intonation it receives H, overriding a lexical tone that might be there (inspired by Gussenhoven’s work)
Interim Summary

- Lexical tones are either invisible for intonational phonology, or overridden by it, unless they happen to be located in the second mora of the most prominent syllable of the intonational domain.
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Proposal

- There are no constraints specifically restricting the domain of the lexical tones;
- The fact that lexical tones have this very restricted domain phonetically follows from the interaction between lexical tones and intonational tones.
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- There are no constraints specifically restricting the domain of the lexical tones;
- The fact that lexical tones have this very restricted domain *phonetically* follows from the interaction between lexical tones and intonational tones.
### Phonology - phonetics interaction

<table>
<thead>
<tr>
<th>Lexical representations</th>
<th>→ intonation →</th>
<th>Pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>L L H m oː də</td>
<td>H L</td>
<td>m oː də</td>
</tr>
<tr>
<td>L H L m oː dər</td>
<td>H H</td>
<td>m oː dər</td>
</tr>
</tbody>
</table>
Tones in unstressed syllables

- There is nothing inherently wrong with lexical tones in unstressed syllables; they are just invisible in the intonational phonology (or overridden by it).

- Is there any evidence for lexical tones in unstressed syllables? Yes there is. The evidence comes from alternations in the inflectional system.
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# Alternations in verbs

<table>
<thead>
<tr>
<th>1st person sg.</th>
<th>1st person pl.</th>
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<tbody>
<tr>
<td>[frɪːf]</td>
<td>[frɪːːvə]</td>
</tr>
<tr>
<td>[blɪːf]</td>
<td>[blɪːːvə]</td>
</tr>
<tr>
<td>[mɔːx]</td>
<td>[mɔːːɣə]</td>
</tr>
<tr>
<td>[bɛːj]</td>
<td>[bɛːjə]</td>
</tr>
<tr>
<td>[ɣʊːn]</td>
<td>[ɣʊːn]</td>
</tr>
<tr>
<td>[kɛːs]</td>
<td>[kɛːzə]</td>
</tr>
<tr>
<td>[vərlɛːs]</td>
<td>[vərlɛːzə]</td>
</tr>
<tr>
<td>[vɔːl]</td>
<td>[vɔːlə]</td>
</tr>
<tr>
<td>[lɛn]</td>
<td>[lɛnə]</td>
</tr>
<tr>
<td>[ɣriːp]</td>
<td>[ɣriːpə]</td>
</tr>
<tr>
<td>[rɪːt]</td>
<td>[rɪːtə]</td>
</tr>
<tr>
<td>[blɪk]</td>
<td>[blɪkə]</td>
</tr>
</tbody>
</table>
Generalisations

1. alternations go from level high tone to falling tone, not the other way around;
2. alternations are only possible if no voiceless consonant intervenes.
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2. alternations are only possible if no voiceless consonant intervenes.
### Alternations in adjectives

<table>
<thead>
<tr>
<th>neuter sg.</th>
<th>masc. sg.</th>
<th>fem. sg.</th>
<th>plur.</th>
<th>comparative</th>
</tr>
</thead>
<tbody>
<tr>
<td>[brú:inn]</td>
<td>[brú:inə]</td>
<td>[brú:in]</td>
<td>[brú:in]</td>
<td>[brú:nər]</td>
</tr>
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<td>[γεí:lo]</td>
<td>[γεí:l]</td>
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<td>[γεí:lo]</td>
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<tr>
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<td>[zú:ir]</td>
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<td>[rú:wer]</td>
<td>[rú:we]</td>
<td>[rú:we]</td>
<td>[rú:wer]</td>
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<tr>
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<td>[bré:ije]</td>
<td>[bré:i]</td>
<td>[bré:i]</td>
<td>[bré:i]</td>
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<tr>
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<td>[oí:je]</td>
<td>[oí:j]</td>
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<tr>
<td>[wí:ıt]</td>
<td>[wí:ije]</td>
<td>[wí:j]</td>
<td>[wí:j]</td>
<td>[wí:j]</td>
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<td>[wí:ıs]</td>
<td>[wí:ize]</td>
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<td>[wí:s]</td>
<td>[wí:zer]</td>
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<tr>
<td>[hé:ıs]</td>
<td>[hé:ısə]</td>
<td>[hé:ısə]</td>
<td>[hé:ısə]</td>
<td>[hé:ısə]</td>
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</tbody>
</table>
## Alternations in nouns (1)

<table>
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<th>singular</th>
<th>plural</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>[yɾáːf]</td>
<td>[yɾɛːf]</td>
<td>'grave'</td>
</tr>
<tr>
<td></td>
<td>[sláːx]</td>
<td>[slɛːx]</td>
<td>'blow'</td>
</tr>
<tr>
<td></td>
<td>[hóːs]</td>
<td>[høːːs]</td>
<td>'stockings'</td>
</tr>
<tr>
<td></td>
<td>[tɪːt]</td>
<td>[tɪːj]</td>
<td>'time'</td>
</tr>
<tr>
<td></td>
<td>[nɔːt]</td>
<td>[nɔːt]</td>
<td>'nut'</td>
</tr>
<tr>
<td></td>
<td>[lɔːt]</td>
<td>[løːt]</td>
<td>'lottery ticket'</td>
</tr>
</tbody>
</table>
Alternations in nouns (2)

<table>
<thead>
<tr>
<th></th>
<th>diminutive</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[γράːf]</td>
<td>[γρέːfkə]</td>
<td>‘grave’</td>
</tr>
<tr>
<td>[hóːs]</td>
<td>[hœːskə]</td>
<td>‘stockings’</td>
</tr>
<tr>
<td>[γράːs]</td>
<td>[γρέːskə]</td>
<td>‘grass’</td>
</tr>
<tr>
<td>[stɛːn]</td>
<td>[stɛːnkə]</td>
<td>‘stone’</td>
</tr>
<tr>
<td>[bɛːn]</td>
<td>[bɛːnkə]</td>
<td>‘leg’</td>
</tr>
<tr>
<td>[lúːk]</td>
<td>[lʏːkskə]</td>
<td>‘hatch’</td>
</tr>
<tr>
<td>[púːp]</td>
<td>[pʏːpkə]</td>
<td>‘fart’</td>
</tr>
</tbody>
</table>
Derivations: ər

agentive suffix -ər is in the same prosodic word as the stem

| [ʃrɪːf]  | [ʃrɪːvər] | ‘write’ | [ʃrɪːvər] |
| [blɪːf]  | [blɪːvər] | ‘stay’ | [blɪːvər] |
| [bɛːj]   | [bɛːjər]  | ‘pray’ | [bɛːjər]  |
| [kɛːs]   | [kɛːzər]  | ‘choose’ | [kɛːzər] |
| [liən]   | [liɛːnər] | ‘borrow’ | [liɛːnər] |
| [vəlɛːs] | [vəlɛːzər] | ‘lose’ | [vəlɛːzər] |
## Derivations: -baar

**Suffix** -baar (‘-able’); forms a separate prosodic word

| [bəʃrɪˈf] | [bəʃrɪˈvə] | ‘describe’ | [bəʃrɪˈvbaːr] |
| [vərkrɪˈx] | [vərkrɪˈə] | ‘acquire’ | [vərkrɪˈvaːr] |
| [vʊˈən] | [vʊˈən] | ‘go’ | [bəʊˈənbəːr] |
| [kɛˈiʃ] | [kɛˈiə] | ‘choose’ | [kɛˈiʒbaːr] |
| [vʊˈi] | [vʊˈiə] | ‘feel’ | [vʊˈiːbaːr] |
| [liˈən] | [liˈənə] | ‘borrow’ | [liˈənbaːr] |
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Basics of the analysis

- Tones flee from an inflectional site, as expected;
- As in many ‘true’ tone languages, Low tone may not spread through a voiceless consonant.
  \[ \text{w} \text{i} \text{i} \text{z} \text{e} \quad \text{h} \text{e} \text{i} \text{t} \text{e} \]
- Only the tone in the second mora of the most prominent syllable in the intonational phrase is pronounced, as we have seen.
Basics of the analysis

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```
H L   H L
|    |    |
wi i z æ   h æ i t æ
```

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```
H  L  H  L
|   |   |
wi i z e h e i t e
```

- Only the tone in the second mora of the most prominent syllable in the intonational phrase is pronounced, as we have seen.
Tone in derivation

- Tones do not flee from a derivational affix; they feel comfortable there.
  \[ \text{H} \quad \text{L} \]

- Again, only the tone in the second mora of the most prominent syllable in the intonational phrase is pronounced.
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  \[ \text{H} \quad \text{L} \]
  comfortable there. \[ r \quad i \quad i \quad v \quad \epsilon \quad r \]

- Again, only the tone in the second mora of the most prominent syllable in the intonational phrase is pronounced.
No alternations from falling tone to level high tone

• Assume e.g. that H tone may not touch Onset. A constraint of this nature is necessary anyway, because voicelessness is truly unmarked in Limburgian (as in Dutch).

• Imagine a H tone in an inflectional affix, and the stem [pʰ:p] ‘to squeak’

  L   H
  |
  p i i p
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```
  L  H
  |
  p i i p •
```
**One more generalisation**

Tonal alternations are always blocked if the stem is polysyllabic

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<thead>
<tr>
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<th>The case of Limburg Dutch</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

<p>| | | | | | |</p>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>snáːvəl</td>
<td>‘beak’</td>
<td>snœːvəlkə</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>káːbəl</td>
<td>‘cable’</td>
<td>këːbələkə</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>vóːyəl</td>
<td>‘bird’</td>
<td>vœːyləkə</td>
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<tr>
<td>kóːyəl</td>
<td>‘bullet’</td>
<td>kœːyləkə</td>
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<tr>
<td>bóːdəm</td>
<td>‘bottom’</td>
<td>bœːdəmikə</td>
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<td>nóːzəm</td>
<td>‘yob’</td>
<td>nœːzəmkə</td>
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</tr>
<tr>
<td>váːdər</td>
<td>‘father’</td>
<td>vœːdərkə</td>
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<tr>
<td>móːdər</td>
<td>‘mother’</td>
<td>mœːdərkə</td>
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<td>máːyər</td>
<td>‘slim’</td>
<td>máːyər</td>
<td>fem.sg.</td>
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</tr>
</tbody>
</table>
Polysyllabic forms: analysis

- This is predicted by our analysis.
- The tone flees from the inflectional site. It is sufficient to reach the stem, where it feels perfectly safe. In intonational phonology it is not pronounced.

```
H   L
l
m a a y ě r
```
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```
H   L
  \ |
  m a a y ø r •
```
Theoretical point

- This generalization cannot be expressed in an analysis where the restricted tonal domain is directly expressed (in terms of requirements stating that tones are only allowed in the main stress syllable of the intonational phrase).
- In such an analysis one would expect that the tone moves one syllable further. There is nothing to block this.
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- Some aspects remain to be worked out. E.g. we need some notion of a hierarchy of morphological features which need to be expressed (e.g. plural on nouns is more stable than adjectival flection)
- Thus this theory needs to be embedded in a wider theory of morphology - phonology interaction and faithfulness
- Given this theory, we can understand the tonal behaviour of Limburgian dialects without reference to (lexical) tonal domains.
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