How I learned how to stop worrying and love the derivation

Marc van Oostendorp

Dr. J.M. van de Weijer Symposion

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We define ‘derivation’ as a phonological computation in which crucially more than one separate representation is involved.

Typically, these representations are also ordered; but for my definition also monostratal OO approaches (such as that of Burzio) count as derivational.

Derivations are a very powerful device, and we should stay away from them as long as possible (at least when we also allow powerful representations).

‘Ordered’ derivations are more restricted than non-ordered ones.
Comparing derivations and representations

- It is difficult to compare derivational and representational analyses, since often we can translate one into the other.
- One moment when representational analyses definitely become to rich, is when they contain two full-blown subrepresentations.
Representations vs. Derivations: Opacity

- Opacity is typically seen as the crucial argument in favour of derivations
- However, representations are often sufficiently rich to deal with such derivational effects, so that we do not need the extra power.
## Hellendoorn Dutch

<table>
<thead>
<tr>
<th>orthography</th>
<th>underlying</th>
<th>surface</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. <em>lopen</em></td>
<td>lopən</td>
<td>lopmį</td>
<td>‘to walk’</td>
</tr>
<tr>
<td>b. <em>weten</em></td>
<td>wetən</td>
<td>wetnį</td>
<td>‘to know’</td>
</tr>
<tr>
<td>c. <em>pakken</em></td>
<td>pakən</td>
<td>pakŋį</td>
<td>‘to grab’</td>
</tr>
<tr>
<td>d. <em>loop een</em></td>
<td>lop ŋn</td>
<td>lopmį</td>
<td>‘(I) walk a (mile)’</td>
</tr>
<tr>
<td>e. <em>rampnacht</em></td>
<td>rampnaxt</td>
<td>rampnaxt</td>
<td>‘disastrous night’</td>
</tr>
<tr>
<td>f. <em>loop een keer</em></td>
<td>lop ŋn ker</td>
<td>lopŋki:r</td>
<td>‘(I) walk one time’</td>
</tr>
</tbody>
</table>

Hellendoorn Dutch

- /stɔp+t+n/ (stop+past+plural) $\rightarrow$ [stɔpŋ] ‘stopped’
- /zɛt+t+n/ (put+past+plural) $\rightarrow$ [zɛtŋ] ‘put’
- /pæk+t+n/ (grab+past+plural) $\rightarrow$ [pækŋ] ‘grabbed’
Hellendoorn Dutch

- t deletion: $t \rightarrow \emptyset / C \rightarrow C$

- progressive assimilation (PA): [nasal]
When we delete /t/ for phonotactic reasons, the feature [coronal] can stay behind and link to the preceding consonant.
### Representation vs. Derivation

#### An Opaque Allomorphy

#### Theoretical tools

#### The Analysis

### Tableau

<table>
<thead>
<tr>
<th>/pak+t+n/</th>
<th>*CCC</th>
<th>EXPRESS-TENSE</th>
<th>ASSIMILATE</th>
<th>FAITH(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pakŋ</td>
<td>* W</td>
<td>L</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>paktŋ</td>
<td>* W</td>
<td>L</td>
<td>L</td>
<td></td>
</tr>
</tbody>
</table>

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Advantage of a representational account

- Representational accounts are more parsimonious, they use a smaller amount of symbols, since derivational accounts usually have several complete representations.
- This of course often comes at the cost of enriching representations, but for instance in this case the enrichment seems acceptable.
The strange behaviour of *aar*


- The Dutch agentive suffix *-aar [aːr]* has a peculiar phonology.
- It is a full vowel-initial suffix which triggers resyllabification of the stem-final consonant (‘Class I’); but it is the only such suffix which is stress-neutral
- *wandel* ‘walk’, *wandelaar* ‘walker’ [vándəlaːr] cognate *-ier [iːr]: winkel* ‘shop’, *winkelier* ‘shop-keeper’ [vǐnkəlǐːr].
- Resyllabification is the clearest diagnostic for being ‘root-level’ in Dutch; since word-final superheavy syllables always attract stress, *-aar*’s stresslessness is surprising.
The role of allomorphy

- Smith (1976) points out that -aar actually has an unmarked allomorph -ər.
- we find -aar after stems ending in a schwa-headed syllable, and -ər elsewhere.
- Suffixes with schwa are always stress-neutral, so that the stress in wandelaar would be exactly what we expected if we would indeed have chosen -ər.
- Smith (1976) suggests that -ər is underlying for both allomorphs, and a rule turns schwa into [aː] after stress rules have applied.
Opacity

UR /vændəl/+ɛr/
stress /vændəlɛr/
ə→aː /vændələɹ/
Problems with Smith (1976)

- Note that Smith’s phonological rule is specific to this one suffix, and furthermore that it is rather unnatural;
- it is overdone to change a schwa into a long low vowel.
- The rule feels like morphology in a phonological guise.
- We are dealing with a case of opaque allomorphy
- However, it is not clear how we can deal with that in a rule-based approach
Opaque allomorphy and representation

- If allomorph selection can be opaque, we have to give up our representational ideals
- Since it looks as if both allomorphs are present, a representational account would need both of them
- But this would be just as strong as having both of them in separate representations, i.e. a derivational relation
- Where derivations can be further restricted, i.e. by ordering
Theoretical tools

- Derivationalism à la Stratal OT, Distributed Morphology etc. is of no use, since there is no reason to assume the two allomorphs are on different strata; we need phonology-internal derivation

- For this, we can use Harmonic Serialism

- However, we need to interact with the lexicon in some way: lexicon insertion is a function of Gen (Wolf 2008, Van Oostendorp 2009)
Harmonic Serialism

- Harmonic Serialism works like standard OT, except that
  - Gen only makes (at most) one change at a time to the input
  - If the output is the same as the input (the FFC wins), the procedure stops
  - Otherwise, the output is made to input and the procedure starts again
Lexicon Insertion as part of Gen

- The input can be either an unstructured set of abstract morphemes, or a complex word consisting of morphemes arranged in some structure.
- Lexical insertion is the job of Gen (Van Oostendorp 2007, Wolf 2007, 2008).
- The optimal output consists of a morphological and a phonological word, which mirror each other.
Derivational steps (sketch)

1. **Input:** \{ \{V, \lambda x : \text{WALK}(x)\}, \{N, \lambda P : \lambda x : P(x)\} \}
2. \{ \{V, \ldots, \text{vandēl}\}, \{N, \ldots\} \} (insertion)
3. \{ \{V, \ldots, \text{vandēl}\}, \{N, \ldots, \text{ēr}\} \} \text{vandēlēr(insertion)}
4. \{ \{V, \ldots\}, \{N, \ldots\} \} (vāndēlēr) (footing)
5. \{ \{V, \ldots\}, \{N, \ldots\} \} (vāndēlar) (reinsertion because of *ēē)
6. No further changes possible because of faithfulness to foot structure
Constraints

- **MParse**: every morpheme needs to have a phonological expression (maybe relativized for
- **a** (probably a cover constraint for featural markedness)
- **PARSE-σ**: Syllables should be parsed into feet
- **e e**
- Faithfulness to ‘underlying’ foot structure

An important (maybe controversial) assumption is that lexical insertion (and even reinsertion) counts as one change.
Conclusions

- Opaque allomorphy selection can only be accounted for by derivational means (all analyses are always derivational, including Van Oostendorp 1998, which used Theory).
- This analysis provides an argument for a specific idea of morphological exponence: phonological representations are inserted by the phonological function Gen.
- Derivation triggered by the interface with morphosyntax doesn’t work.
- The argument given here interestingly is still based on interleaving of interfaces, viz. with the lexicon.