Same problem, different solutions
Gaps and repairs at the morphology-phonology interface

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October 29, 2005
Outline

1. Sketch of the problem
   - Description and example
   - The challenge

2. Sketch of a solution
   - Framework
   - Extension

3. A prediction of the solution
   - Description and example
   - Analysis

4. Conclusions and questions
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Phonologically motivated paradigmatic gaps

- Phonology may interfere in word-formation processes.
- This can lead to a ‘repair’.
- But the problem may be irreparable, resulting in a gap.
Gaps in Norwegian verbal paradigms

- **Well-formed infinitive–imperative pairs**
  - å skrive – skriv! ‘(to) write’
  - å bytte – bytt! ‘(to) (ex)change’
  - å løfte – løft! ‘(to) lift’

- **Ill-formed infinitive–imperative pairs**
  - å åpne – *åpn! ‘open’
  - å padle – *padl! ‘paddle’
  - å sykle – *sykl! ‘bike’
Gaps in Norwegian verbal paradigms

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Why are phonologically motivated gaps important?

In Optimality Theory . . .

- For every input, there is always an optimal output.
- A well-formed output does not have to be perfect; it just has to be best.
Why are phonologically motivated gaps important?

- With gaps, no output is good enough.
- The faithful output violates highly ranked *MARK.
- Unfaithful outputs don’t win either.
- The word-formation process fails. An identifiable input gets no output.
The analytical challenge

- Gaps represent synchronic grammatical knowledge.
- We need a strategy for analyzing these cases within OT.
- The null parse/output? Control? String-based correspondence theory?
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Optimal paradigms theory (McCarthy 2005)

- Candidates are paradigms
- Violations of markedness and IO-faithfulness constraints are awarded for each instance of a violation within the paradigm
A candidate paradigm may be ‘incomplete’; it may fail to implement some category.

MAX\{CAT\} constraints disprefer gaps.

Consequence MARK, FAITH ≫ MAX\{CAT\}, a paradigm with a gap may be optimal.
## Optimizing a defective paradigm

<table>
<thead>
<tr>
<th>sykl/inf./imp.</th>
<th>SONSEQ</th>
<th>$\text{ID(VOI)}_{IO}$</th>
<th>MAX{IMP.}</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) sykle\textsubscript{inf.}, sykl\textsubscript{imp.}</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) sykle\textsubscript{inf.}, sykl\textsubscript{imp.}</td>
<td></td>
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</tr>
<tr>
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<td></td>
<td></td>
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Curt Rice  
Gaps and repairs
Factorial typology

\[ \text{MARK} \gg \text{MAX}\{\text{CAT}_1\} \gg \text{FAITH} \gg \text{MAX}\{\text{CAT}_2\} \]

- \( \text{CAT}_1 \) will be expressed with an unfaithful output.
- \( \text{CAT}_2 \) is unexpressed; a gap is the best solution.
When imperatives and singulars are the same

- A root can yield a verb or a noun.

- The imperative and the singular are identical.
  - *skriv!* ‘write!’; *(et) skriv* ‘(a) document’
  - *dans!* ‘dance!’; *(en) dans* ‘(a) dance’
  - *kast!* ‘throw!’; *(en) kast* ‘(a) throw’
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Some roots end in clusters with rising sonority.
- /sykl/ ‘bike’
- /adl/ ‘nobility’
- /hindr/ ‘hinder’
- /ordn/ ‘arrange’

How are singulars formed?
—By epenthesis: sykkel, adel, hinder, orden.

How are imperatives formed?
—They aren’t.
When imperatives and singulars differ

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Nouns undergo epenthesis in the singular

- /sykl/ (No underlying schwa)
  - sykkel, syklene, syklist
  - *sykkelene, *sykkelist

- /kjøkken/ (Underlying schwa)
  - kjøkken, kjøkkene
  - *kjøkkenene
  - *kjøknene
One grammar yields both epenthesis and a gap.

The fully faithful candidate violates $\text{SONSEQ}$.  

$\text{MAX}\{\text{SG.}\} \gg \text{DEP}$ favors epenthesis in the singular.

$\text{DEP} \gg \text{MAX}\{\text{IMP.}\}$ favors a gap for the imperative.
Optimize one gap and one ‘repair’

<table>
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<tr>
<td>c) sykkel&lt;sub&gt;sg.&lt;/sub&gt;, sykler&lt;sub&gt;pl.&lt;/sub&gt;, sykle&lt;sub&gt;inf.&lt;/sub&gt;</td>
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<td>d) sykkel&lt;sub&gt;sg.&lt;/sub&gt;, sykler&lt;sub&gt;pl.&lt;/sub&gt;, sykle&lt;sub&gt;inf.&lt;/sub&gt;, sykkel&lt;sub&gt;imp.&lt;/sub&gt;</td>
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The optimal gaps approach . . .

- construes gaps crucially as a phonology-morphology interface problem, and models this in optimal paradigms theory.

- reveals *same problem, different solutions* situations, cf. Norwegian singulars vs. imperatives.

- offers enhanced theoretical parsimony by eliminating the null parse, ⊙, MPARSE, and Control.
Unanswered questions

- Why are there gaps? Why is non-expression ever the optimal solution?

- What about *same problem, different solutions* situations in which the *different solutions* are both repairs?
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