

The phonology of Norwegian

Topic 3: Modeling Absolute Ungrammaticality

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- (1) This material draws on Rice (2003, 2005, 2006b) and papers to appear in Rice (2007). On the phenomenon in general, see Hetzron (1975), Albright (2003, 2007).
Various handouts on the topic can also be found at www.hum.uit.no/a/rice.

1 Imperative formation in Norwegian

- (2) Well-formed imperatives
- å spise – spis! ‘(to) eat’
 - å snakke – snakk! ‘(to) talk’
 - å løfte – løft! ‘(to) lift’
- (3) Ill-formed imperatives
- å åpne – *åpn! ‘open’
 - å padle – *padl! ‘paddle’
 - å sykle – *sykl! ‘bike’
- (4) Range of possible solutions and the factorial typology
- Epenthesis between consonants
 - Devoice the sonorant
 - Delete the sonorant
 - Metathesis (unattested)
 - Syncretism: Use the infinitive
 - Avoidance

2 Examples of gaps from other Germanic languages

- (5) Swedish (Iverson 1981)

- a. en rysk pojke (masc.) ‘a Russian boy’; et rysk-t barn (neut.) ‘a Russian child’
 - b. en redd pojke (masc.) ‘a scared boy’; *et redd-t barn (neut.) ‘a scared child’
- (6) Dutch Diminutives (van Oostendorp 2007): Schwa final words resist diminutive formation.
- (7) German: Restrictions on diminutive formation, e.g. ?*Europa + chen*
- (8) English: Gaps in schm- reduplication (Nevins and Vaux 2003)
- a. Well-formed schmeduplications
 - (i) Holiday: holiday–schmoliday
 - (ii) Nevins: Nevins–schmevins
 - b. Gaps–schmaps
 - (i) Schmidt: *Schmidt–Schmidt
 - (ii) Schmooze: *schmooze–schmooze
 - (iii) Schmuck: *schmuck–schmuck
- (9) What other examples of gaps can you provide?

3 Gaps as an architectural problem for OT

- (10) Why are phonologically motivated gaps important?
- a. In Optimality Theory ...
 - (i) For every input, there is always an optimal output.
 - (ii) A well-formed output does not have to be perfect; it just has to be best.
 - b. With gaps, no output is good enough.
 - (i) The faithful output violates highly ranked *MARK.
 - (ii) Unfaithful outputs don’t win either.
 - (iii) The word-formation process fails. An identifiable input gets no output.

4 Strategies for optimizing gaps

- (11) The architecture of OT is such that every input must be mapped onto some output. The data involving gaps seem—at least informally—to be situations in which there is an input which maps onto no output. How can the architecture of OT model gaps? How can some input be mapped onto nothing?
- (12) *Null Parse* (Prince and Smolensky 1993)
 The *null parse* is a candidate which is in some crucial sense incomplete, e.g. it lacks a morphological category, and therefore violates the constraint MPARSE. Depending on the constraint ranking in EVAL, this candidate may nonetheless

be optimal. When it is, its ill-formedness makes it “uniquely unsuited to life in the outside world” (Prince and Smolensky 1993: 51).

- (13) *Control* (Orgun and Sprouse 1999)
CONTROL is posited as a component of the grammar with ‘hard’ constraints. The candidate which wins in EVAL is then submitted to the control component. If that candidate violates the hard constraint(s), there is no output for the given input.
- (14) *Null output* (McCarthy 2002)
A slight revision on the *null parse*, the *null output* is described as having “no structure whatsoever” (McCarthy 2002: 197). This candidate “always and only” violates MPARSE. Since the usual definition of MAX would lead to an awarded violation for \odot , the restriction to “only” violating MPARSE is a stipulation.
- (15) *String-based correspondence theory* (McCarthy and Wolf 2005)
This development is partially motivated to develop a conception of the null output which actually does not violate MAX, which which does violate “always and only” MPARSE, but without stipulation.
- a. A distinction is drawn between a candidate output suffering from pervasive deletion, represented as ϕ , and the null output, \odot .
 - b. Deletion is represented as a mapping from an input segment to an output ‘#’, which is an empty string in a concatenative decomposition.
 - c. MAX is redefined as an input-output correspondence relation, which is *not* violated by mapping to #.
 - d. MPARSE punishes the failure to have a ‘total bijective function’ mapping the input onto the output. When the output is empty (as opposed to being filled with #s), there can be no such function. Hence, there is no correspondence, and no violation of the usual faithfulness constraints.
 - e. MPARSE is relativized to individual morphological categories.
- (16) *Optimal gaps* (Rice 2005)
- a. This approach analyzes gaps within the optimal paradigms framework (McCarthy 2005). One of the central components of that theory is that candidates are paradigms.
 - b. The *optimal gaps* strategy explores the consequences of candidates which are *incomplete paradigms*.
 - c. In typical OT-fashion, tension is created between phonological markedness constraints and constraints requiring the expression of a morphological category, MAX{CAT}.
 - d. The tableau in (15e) illustrates the basic strategy. With this input, we consider candidates which consist of paradigms expressing the infinitive and the imperative. Candidate (a) has a morphologically well-formed imperative which violates the phonological markedness constraint. Candidate (c)

improves on markedness by devoicing the sonorant in the imperative, and the cost of having different expressions of the root in the two members of the paradigm. Candidate (d) devoices both sonorants. Candidate (b) fails to express the imperative. Given the grammar below, the incomplete paradigm is optimal. The relatively highly ranked constraint $\text{MAX}\{\text{IMP.}\}$ is not included in the tableau for typographical reasons.

- e. Optimizing a defective paradigm

| | sykl/inf./imp. | SONSEQ | IO-ID(VOI) | OP-ID(VOI) | $\text{MAX}\{\text{IMP.}\}$ |
|------|---|--------|------------|------------|-----------------------------|
| a) | <u>syk</u> le _{inf.} , <u>sykl</u> _{imp.} | *! | | | |
| b) | <u>syk</u> le _{inf.} , <u>sykl</u> _{imp.} | | *! | ** | |
| c) | <u>sykl</u> e _{inf.} , <u>sykl</u> _{imp.} | | *!* | | |
| ☞ d) | <u>syk</u> le _{inf.} , | | | | * |

5 Further predictions of the OP approach

- (17) The *optimal gaps* approach posits a constraint for each morphological category, requiring its expression. As recently noted by Rebrus and Törkenczy (2005), this opens the door to the same (phonological) problem receiving different solutions in different (morphological) contexts. Related discussion appears in McCarthy and Wolf (2005).
- (18) Can we identify situations in which different word formation processes encounter the same phonological difficulty, and find the different word formation processes show different solutions?

5.1 Norwegian verbal and nominal roots

- (19) Both nouns and verbs can be formed on some roots. Without any affixation, these roots can become the (nominal) singular or the (verbal) imperative.
- skriv!* ‘write!'; (*et*) *skriv* ‘(a) document’
 - kost!* ‘sweep!'; (*en*) *kost* ‘(a) broom’
 - dans!* ‘dance!'; (*en*) *dans* ‘(a) dance’
 - kast!* ‘throw!'; (*en*) *kast* ‘(a) throw’
- (20) Some roots end in clusters with rising sonority.
- /sykl/ ‘bike’
 - /adl/ ‘nobility’
 - /hindr/ ‘hinder’

d. /ordn/ ‘arrange’

- (21) What is the fate of these stems when singular nouns are to be formed?
 —They show epenthesis: *sykkel*, *adel*, *hinder*, *orden*. (For discussion of Norwegian quantity, including the gemination on *sykkel* cf. Rice (2006a).) Note that the stem can appear, e.g. in other forms of the noun *sykler* ‘bikes’; *syklist* ‘cyclist’;
- (22) What is the fate of these stems when imperatives are to be formed?
 —They crash.
- (23) The same phonological problem—syllabification of a final cluster with rising sonority—is dealt with in different ways in different morphological contexts. In the singular form of the noun, the phonological problem is repaired. In the imperative, it is not.
- (24) In the *optimal gaps* approach, this can be understood as a situation in which the requirements to express the categories have different relationships with the phonological constraint(s) prohibiting various repair strategies.
- (25) Repair and a gap in the same paradigm

| | sykl/sg./pl./inf./imp. | SONSEQ | MAX{SG.} | DEP | MAX{IMP.} |
|----|---|--------|----------|-----|-----------|
| a) | <u>sykl</u> _{sg.} , <u>sykler</u> _{pl.} <u>sykle</u> _{inf.} , <u>sykl</u> _{imp.} | *!* | | | |
| b) | <u>sykkel</u> _{sg.} , <u>sykler</u> _{pl.} <u>sykle</u> _{inf.} , <u>sykl</u> _{imp.} | *! | | * | |
| c) | <u>sykkel</u> _{sg.} , <u>sykler</u> _{pl.} <u>sykle</u> _{inf.} , <u>sykkel</u> _{imp.} | | | **! | |
| d) | <u>sykler</u> _{pl.} , <u>sykle</u> _{inf.} , | | *! | | * |
| e) | <u>sykkel</u> _{sg.} , <u>sykler</u> _{pl.} , <u>sykle</u> _{inf.} , | | | * | * |

- (26) Considering the possibility of epenthesis, the requirement to express the singular is more important than the prohibition on epenthesis, while the prohibition on epenthesis is more important than the requirement to express the imperative. Because there is no ‘null output’ in optimal gaps theory, we must consider candidate paradigms. For pedagogical reasons, (24) illustrates a paradigm consisting of the singular and plural forms of the noun and the imperative and infinitive of the verb.

- a. The singular and the imperative are identical to the root. When the root has a cluster with rising sonority, these will each incur a violation of SONSEQ, as in candidate (a).
- b. If we repair just the singular with epenthesis, as in candidate (b), a single violation of SONSEQ remains, eliminating the candidate paradigm.
- c. Repairing both of the offenders eliminates SONSEQ violations, but gives two DEP violations, as in candidate (c).
- d. A paradigm which has expresses only two of the four morphemes incurs a violation of each of the $\text{MAX}\{\text{CAT}\}$ constraints, as in candidate (d).
- e. Given the ranking, the best situation is the nonexpression of just one of the categories, and a single DEP violation. In this way, one of the SONSEQ violators is repaired (sing.) and one leads to a gap (imp.).

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