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

Phonology can interfere with morphological processes. When a morphological operation yields a phonologically ill-formed word, the form cannot surface as is. In some cases, an ill-formed structure undergoes repair. In other cases, the attempt for a synthetic expression of the relevant morphological category is abandonded, leaving periphrasis or circumlocution as the only options for its expression. The latter situation describes the case of a *gap* in a paradigm. A model of synchronic grammatical knowledge must include a strategy for representing phonologically grounded crashes in the morphology, i.e. gaps are 'produced' and in that sense, they reflect synchronic knowledge. Relevant discussion is found inter alia in Albright (2003); Fanselow and Féry (2002); Klein (2005); McCarthy and Wolf (2005); Orgun and Sprouse (1999); Raffelsiefen (2004); Rice (2003, 2005); Törkenczy (2002), and references cited in those works.

The existence of principally motivated gaps would seem to present a fundamental challenge to OT, since the architecture of the theory requires that every input be mapped onto some output. Gaps—at least informally—seem 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? Proposals for dealing with this issue have been present from the start, including the *null parse* (Prince and Smolensky 1993), *control theory* (Orgun and Sprouse 1999), and the *null output* (McCarthy 2002). Rice (2005) treats gaps within the context of *optimal paradigms theory*, while McCarthy and Wolf (2005) develop an approach within *string-based correspondence theory*.

This paper develops a specific prediction of Rice's proposal, which sets the stage for a test of McCarthy & Wolf's theory as well. In particular, the OP approach rewards paradigms with gaps when a requirement to express a morphological category, MAX{CAT}, is outranked by the faithfulness constraint which a repair violates. Under these circumstances, a gap in a paradigm is preferred to a paradigm with a repaired form. Given that there is a MAX{CAT} constraint for each category which the paradigm should express, there will be the formal possibility that two MAX{CAT} constraints flank a faithfulness constraint. Such a ranking predicts the following situation: Two different word formation processes in L meet the same phonological challenge. In one category, the problem is repaired, while in another category, the problem results in a gap.

We present an analysis of exactly such a case from the morphology-phonology interface in Norwegian. Half of the example draws on the analysis of Norwegian imperatives given in Rice (2003). Well formed imperatives are identical with the root, e.g. *spis!* 'eat', *snakk!* 'talk', *løft!* 'lift'. But when a root ends with a cluster with rising sonority, the imperatives are ill-formed and the result is a gap, e.g. **åpn!* 'open', **padl!* 'paddle', **sykl!* 'bike'. Given the resulting gaps, we conclude that a faithfulness constraint banning repairs, e.g. DEP, dominates MAX{IMPERATIVE}. The second half of the story comes from the nominal paradigm. Again, zero affixation is involved, now to make the nominative singular from the root. Hence, for well-formed roots which can be both nouns and verbs, the imperative is identical to the singular. Examples include *skriv!* 'write!', *(et) skriv* '(a) document'; *kost!* 'sweep!', *(en) kost* '(a) broom'; *dans!* 'dance!', *(en) dans* '(a) dance'; *kast!* 'throw!', *(en) kast* '(a) throw'.

The crucial situation again involves roots ending with a cluster of rising sonority. There is no imperative for these forms, but each of them indeed has a singular. Roots such as /sykl/ 'bike', /adl/ 'nobility', /hindr/ 'hinder' or /ordn/ 'arrange' give singular nouns in which the cluster is repaired through epenthesis: *sykkel*, *adel*, *hinder*, *orden*. Here we see that the requirement to express the category, MAX{SINGULAR}, dominates the faithfulness constraint DEP, such that epenthesis is invoked to be able to have a singular form, giving precisely the flanking ranking described above. The specific example culminates in an explication of the tableau in (1), followed by a consideration of further implications for the two current approaches to gaps.

(1) Repair and a gap in the same paradigm

	sykl/sg./pl./inf./imp.	SonSeq	Max{sg.}	Dep	Max{imp.}
a)	sykl$_{sg.}$, sykler$_{pl.}$ sykle$_{inf.}$, sykl$_{imp.}$	*!*			
b)	sykkel$_{sg.}$, sykler$_{pl.}$ sykle$_{inf.}$, sykl$_{imp.}$	*!		*	
c)	sykkel$_{sg.}$, sykler$_{pl.}$ sykle$_{inf.}$, sykkel$_{imp.}$			**!	
d)	sykler$_{pl.}$, sykle$_{inf.}$,		*!		*
☞ e)	sykkel$_{sg.}$, sykler$_{pl.}$, sykle$_{inf.}$,			*	*

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