Phonologically Conditioned Multiple Feature Mutation in Maskelynes

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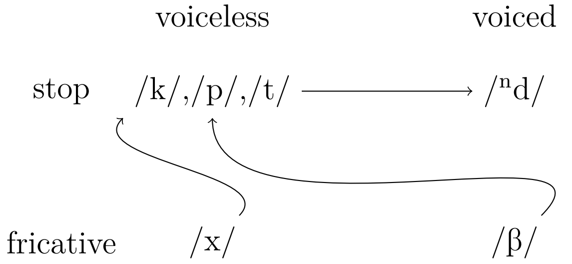
Main Claim: Phonologically Conditioned Multiple Feature Mutation (MFM) in Maskelynes ambitransitive verbs involves three different phonological changes. I claim that these changes can be ascribed to prefixation of two floating features: [+voice] and [–continuant]. The changes are then mediated in a parallel containment OT system by a *Twin constraint against nodes being associated to the same feature value twice and a featural cooccurrence constraint against voiced dorsal sounds.

Data: In Maskelynes (Oceanic, Vanuatu) ambitransitive forms of some verbs are marked by mutation of the initial consonant (Healy 2013:149-151), see (2). In this process non-coronal fricatives /β/ and /x/ become voiceless plosives /p/ and /k/. The voiceless plosive /t/ becomes voiced and prenasalized /^{n}d/. No other sounds are changed. As shown in (1), these seemingly unnatural processes involve changes from voiced to voiceless and reverse. They are also restricted to certain places of articulation.

(1) Direction of mutation in Maskelynes



(2) Examples of Maskelynes MFM

Transitive	Ambitransitive
ti-i	^{n}di
twist-OBJ	twist\AMBITR
xaɾuβ^{w}-i	kaɾuβ^{w}
scratch-OBJ	scratch\AMBITR
βəxas-i	pəxas
annoint-OBJ	annoint\AMBITR

Analysis: I will analyze this mutation pattern following Nonlinear Generalized Affixation (Bermudez-Otero 2012), where seemingly non-concatenative morphological approaches are reduced to affixation of non-segmental phonological material. In this specific case, I will assume prefixation of a [+voice] ((+v)) and a [–continuant] ((–c)) feature.

Parallel evaluation in an Containment Optimality Theory (Prince & Smolensky 1993/2004) will ensure the realization of only one feature at a time. The trigger of feature docking will be a constraint requiring each morphological affiliation to be phonologically realized. Following the terminology developed in Colored Containment (van Oostendorp 2007), morphological affiliation can be represented as color. This allows us to formulate the RealizeMorpheme constraint given in (3), based on a similar constraint in van Oostendorp (2005). In the folllowing, featural affixes will be given in blue.

(3) RealizeMorpheme: Count one violaton for every color that is not affiliated to any phonetically visible material.

(4) Evaluation of /(–c)(+v)xaɾuβ^{w}/ [kaɾuβ^{w}]

	(–c)(+v)xaɾuβ^{w}	*G	RM	Faith
a.	(–c)(+v)xaɾuβ^{w}		*!	
☞b.	(+v)kaɾuβ^{w}			*
c.	(–c)ɣaɾuβ^{w}	*!		*

(5) Evaluation of /(–c)(+v)ti/ [^{n}di]

	(–c)(+v) ti	*Twin	RM	Dep(^{n})
a.	(–c)(+v)ti		*!	
☞b.	(–c)^{n}di			*
c.	(+v)ti	*!		

This constraint is satisfied as soon as one of the floating affixal features is docked onto some segment. For the velar fricative, the choice will be completely dependent on markedness considerations. In the example evaluation shown in (6), a phonetically grounded markedness constraint against voiced dorsal sounds *G (cf. McCarthy & Prince 1995) is ranked high. This excludes docking of the floating [+voice] feature ((+v)), as shown in candidate c. Not associating any feature, as exemplified by the faithful candidate a., would result a fatal violation of the REALIZEMORPHEME constraint, because no part of the floating feature affix would be phonetically visible.

Turning to mutation along the voicing distinction, a further constraint *TWIN (cf. Clements & Keyser 1983) becomes relevant. This constraint has access to all structure, independent of the phonetic visibility. It penalizes any segmental root node associated twice to the same feature with the same value, see (6).

(6) *TWIN: Count one violation for each segmental root node that is associated to two like features with the same value.

In the example evaluation in (5), the voiceless stop in the input is already specified as [–continuant]. Therefore the docking of the floating [–continuant] feature $\textcircled{\scriptsize -c}$, as shown in candidate c., is not optimal. It violates the *TWIN constraint fatally. Since not docking any feature at all, as shown in the faithful candidate a., fatally violates the REALIZEMORPHEME constraint, candidate b. becomes optimal. This is true, even though it adds a violation of the DEP(nas) constraint by inserting a [+nasal] feature (given in gray). This insertion is necessary, because non-prenasalized voiced plosives are not attested in Maskelynes. Ultimately, it is thus the *TWIN constraints that decides which feature is associated.

Recall that the bilabial fricative mutates along both the voicing and the continuancy dimension. I analyze this as docking of the floating [-continuant] feature and avoidance of [+nasal] insertion. As shown in candidate c. such a nasal insertion and thereby mutation to a prenasalized stop is excluded by the constraint DEP(nasal). Not docking any feature (candidate a.) and docking the [+voice] feature to an already voiced consonant both do not become optimal as before because of the REALIZEMORPHEME and the *TWIN constraint. Therefore candidate b., which docked the [–continuant] feature and changed the voicing value can become optimal.

(7) Evaluation of /$\textcircled{\scriptsize -c}\textcircled{\scriptsize +v}$βəxas/ [pəxas]

	$\textcircled{\scriptsize -c}\textcircled{\scriptsize +v}$βəxas	*TWIN	RM	DEP(nas)	vd→●
a.	$\textcircled{\scriptsize -c}\textcircled{\scriptsize +v}$βəxas		*!		*
☞b.	$\textcircled{\scriptsize +v}$pəxas				**
c.	$\textcircled{\scriptsize +v}$$^{\mathrm{m}}$bəxas			*!	*
d.	$\textcircled{\scriptsize -c}$βəxas	*!			*

Discussion: One remaining problem are certain underlying sounds that do not undergo mutation, e.g. underlying /$^{\mathrm{n}}$g/. The solution is to protect this sound by a [nasal]→ • constraint. The same problem attains for /p/. Here, no markedness constraint parallel to *G is possible. It must be assumed to be an accidental gap.

An alternative rule-based approach would have difficulties to give a unified account of the targets and outcomes of the mutation patterns. Neither a rule voicing all obstruents, nor a rule converting all obstruents into plosives can derive the data. Crucially, the same is true for a rule combining both changes. Similarly, Cophonology Theory (Orgun 1996; Inkelas 1996) would require a different cophonology for ambitransitive verbs with a ranking that triggers all of the changes and only these changes. Since at least the change from /t/ to /$^{\mathrm{n}}$d/ is markedness increasing, this poses a challenge. Indexed constraints (Flack 2007, Pater 2007) on the other hand, have a problem with the locality of the process. In the absence of segmental affixial material one could only expect all consonant in the verb form to undergo these changes.