

## Morphology Affects Loanword Phonology

Loanwords often exhibit non-native structures. Some of these structures are replaced by the corresponding native ones only in morphologically integrated loanwords, both diachronically and synchronically (Bloomfield 1933:447ff.; LaCharité & Paradis 2005). This paper provides empirical evidence that the foreign structures may differ in what kind of morphologically complex words they appear. Some structures are possible in suffixed, but not prefixed, words. Other structures are possible in inflected, but not derived, words. These typological distinctions are attributed to a single class of OT constraints.

Morphology can affect the distribution of foreign sounds. For example, some speakers of Dutch can pronounce bare roots from English with [ɪ], which is replaced by the native rhotic [ʀ] in suffixed words (1).

(1)	Dutch:	$\text{ɪ} \sim \text{ʀ}$			
	Op[ɪ]ah	‘Oprah’	Op[ʀ]ah-tje	*Op[ɪ]ah-tje	‘DIM’
	Ba[ɪ]ack	‘Barack’	Ba[ʀ]ack-se	*Ba[ɪ]ack-se	‘ADJ’
	[ɪ]eading	‘Reading’	[ʀ]eading-je	*[ɪ]eading-je	‘DIM’
	Flo[ɪ]ida	‘Florida’	Flo[ʀ]ida-tje	*Flo[ɪ]ida-tje	‘DIM’

One standard approach to the above pattern is to say that the speakers of Dutch employ two different cophonologies. Loanword roots take the foreign cophonology (allowing  $\text{ɪ}$ ), whereas the suffixes take the native cophonology (no onset  $\text{ɪ}$ ). Whenever both kinds of morphemes appear in the same word, the suffix trumps the root, and the native cophonology applies to the whole word (Inkelas & Zoll 2007).

This solution faces several challenges. First, not all affixes have the same effect. A particular foreign structure that is allowed in bare loanword roots, may be prohibited only in a subset of affixed forms. In Dutch, derivational suffixes trigger nativization (1), but not inflectional suffixes (e.g. Op[ɪ]ah[s] ‘-PL’) or prefixes (hoofd-op[ɪ]ah ‘main O.’). Second, not all languages behave uniformly. Tables (2) and (3) give a cross-linguistic typology. For example, Tagalog replaces the foreign [f] in bare roots (fiesta ‘holiday’) with [p] in suffixed (pista-ng ‘festivities’) and prefixed words (mag-pista ‘two h.’; data from Zuraw 2006). Canadian English allows the French [ʀ] in words with prefixes (eks-opɛʀ ‘ex-au pair’), but not in words with infixes (\*o-fʌkɪŋ-pɛʀ/ou-fʌkɪŋ-pɛʀɪ ‘-EXPL-’) or suffixes (\*opɛʀ-z/ouɛʀɪ-z ‘-PL’).

(2)	Foreign structure allowed?			
	PREFIX	SUFFIX	INFIX	LANGUAGE
I	✗	✗		Slovenian
II	✗	✗	✗	Tagalog
III	✓	✗		Dutch
IV	✓	✗	✗	English

(3)	Foreign structure allowed?		
	DERIVAT	INFLECT	LANGUAGES
I	✗	✗	English, Ukrainian
II	✗	✓	Dutch, Catalan

These typologies suggest that morphological restrictions on foreign phonotactics are language specific and do not seem to follow from any other properties of the languages in question. For instance, inflection in Dutch appears to be very similar to inflection in English, yet Dutch allows the relevant foreign structures with inflection, while English does not.

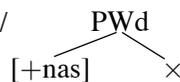
To capture these typological differences, I instead propose a single OT constraint. The idea is that the foreign structure is limited to the morpheme at the edge of a domain. For example, Dutch allows [ɪ] as long as it appears in the rightmost morpheme within the stem (as it is the case in bare root forms, prefixed and inflected forms). Derivational suffixes trigger nativization, because the root is no longer aligned with the stem edge. In OT, these effects can be achieved with alignment constraints (McCarthy & Prince 1993). Here, I use a more recent version, termed Licensed Alignment (henceforth, LA), proposed by Hyde (to appear) and Jurgec (2011). LA resembles classic alignment in many ways: both refer to domains and features.

However, LA constraints also crucially differ from classic alignment. First, LA constraints are categorical, not gradient (McCarthy 2003). Second, LA constraints may also contain more than two domains or features.

Consider the constraint that drives progressive nasal harmony: \*PWd[+nasal, ×] (4). This constraint is violated by triplets ⟨PWd, [+nasal], ×⟩, when [+nasal] precedes the root node, within the Prosodic Word. Nasal harmony satisfies the constraint, because [+nasal] is associated (and is thus synchronic) with the target root node.

Even though Dutch does not involve spreading, the loanword pattern can nevertheless be attributed to the effects of LA. This is because LA can also be satisfied by changing/deleting the feature. In Dutch, some feature (or a combination of features) of the English rhotic cannot be followed by an affix, within the stem. For simplicity, the relevant features of the rhotic are henceforth replaced with “r”. The constraint active in Dutch is \*stem[r, affix] (5). This constraint is violated by triplets ⟨stem, r, affix⟩, when [r] precedes the affix, within the stem.

(4) \*PWd[+nasal, ×]  
\*⟨PWd, +nas, ×⟩ /



(5) \*stem[r, affix]  
\*⟨st, r, affx⟩ /



The LA constraint in (5) can be satisfied by spreading the relevant feature to a suffix segment. While there are cases of harmony that target only a single segment in the suffix (Kaplan 2008; Walker 2011), this is not what happens in Dutch, which instead prefers a feature change. This suggests that the faithfulness constraints prefer the mapping /r/ → [R] rather than spreading, or deletion of [r]. The LA constraint is violated whenever a derivational affix follows a root containing an [r], in which case [R] surfaces instead (6). Crucially, bare roots, inflected and prefixed words satisfy LA, and hence the faithful candidate wins (7).

(6) r not possible with derivational suffixes

/flɔɪɪda-tʰə <sub>st</sub> -s/	*st[r, affx]	IDENT
a. flɔɪɪda-tʰə <sub>st</sub> -s	⟨st, r, tʰə⟩!	
b. <del>r</del> flɔɪɪda-tʰə <sub>st</sub> -s		*

(7) r possible with prefixes and inflections

/hoft-flɔɪɪda <sub>st</sub> -s/	*st[r, affx]	IDENT
a. <del>r</del> hoft-flɔɪɪda <sub>st</sub> -s		
b. hoft-flɔɪɪda <sub>st</sub> -s		*!

The LA approach can be easily extended to capture other languages. When the precedence relations are reversed, prefixes trigger nativization. In Tagalog and Slovenian, prefixes and suffixes trigger nativization, which means that two mirror LA constraints are required. Moreover, when LA refers to words rather than stems, inflectional affixes also have an effect, as in English or Ukrainian.

LA makes further predictions about how loanword phonology can be affected by morphological domains. Since there is no domain common to roots and inflectional affixes to the exclusion of derivational affixes, there should be no language in which only inflectional, but not derivational, suffixes trigger nativization. Indeed, no such pattern has been identified, whereas the opposite pattern appears to be quite frequent (3). Furthermore, LA treats each nativization pattern as separate, because each constraint refers to a specific feature. This correctly predicts a language in which loanword patterns differ with respect to their domains. In Slovenian, some nativizations are observed with inflection (rɔk ‘rock’ ~ rɔk-a ‘GEN’) and derivation (rɔk-er ‘rocker’). Other nativizations do not obtain with inflectional affixes (mesetʃusɔts ‘Massachusetts’, mesetʃusɔts-a ‘GEN’), but they do obtain with derivational affixes (mesetʃusɔts-tʃan ‘demonym’).

This paper provides the first cross-linguistic study of how morphological structure affects loanword phonology. The effects are attributed to alignment constraints that refer to features and morphological domains. These constraints correctly predict that (i) derivational affixes have stronger effects than inflectional affixes, (ii) prefixes and suffixes can differ in their effects, and (iii) a single language can exhibit multiple patterns that are sensitive to different domains.