Squibs and Discussion

Disjunctive Lexical Stratification
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1 Introduction

In many languages, loanwords allow patterns that are absent in the native phonology.[1] The phonotactic requirements for loanwords may thus be less restrictive than the ones for the native vocabulary. For instance, native items in Turkish have only voiceless obstruents in codas, while both voiced and voiceless obstruents are found in loanword codas (Inkelas, Orgun, and Zoll 1997). The opposite pattern, in which loanwords only allow a subset of the structures attested in native words, is crosslinguistically rare but attested (Nádasdy 1989, Kawahara, Kohei, and Ono 2003, Kenstowicz 2005). For example, in Latvian, [æ] can only occur in native words. It cannot occur in loanwords, where it is replaced by [e]: for example, [manxɛ̲tena] 'Manhattan' (Gelbart 2005).

Here, I present the third type of language, in which the sets of native and foreign phonotactic patterns are disjunctive. In Slovenian, there is no overlap between the sets of front vowels appearing before tautosyllabic [ɾ] in native words and in loanwords. Thus, loanwords in Slovenian are more exceptional with respect to native words than previously thought possible.

The Slovenian data have implications for the theory of exceptionality. Since the advent of Optimality Theory, exceptional loanword patterns have been modeled using either cophonologies (Inkelas,

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[1] These include Japanese (McCawley 1968, Ito and Mester 1995a, 1999, 2003, 2008), Korean (Cho 2001), Huautla Mazatec (Fries and Pike 1949), Turkish (Inkelas, Orgun, and Zoll 1997), Finnish (Karvonen 1998), Hebrew (Becker 2003), Russian (Holden 1976), German (Féry 2003, Ito and Mester 2001), Norwegian (Rice 2006), and Catalan (Mascaró 1978).

Orgun, and Zoll 1997, Anttila 2002, Inkelas and Zoll 2007) or indexed constraints (Ito and Mester 1995b, 1999, 2001, Pater 2000, 2007, 2009). Cophonologies allow independent constraint rankings for different groups of words (*lexical strata*). Indexed constraints, on the other hand, are limited in their domain of application to a particular set of morphemes. Pater (2007, 2009) argues that indexed constraints are more restrictive than cophonologies. The crucial difference between the theories is that indexed constraints apply to a single morpheme, while a cophonology applies to an entire phonological domain. For example, an exceptional suffix could trigger initial epenthesis in a root if the constraints of the exceptional cophonology applied to the whole word. Because indexed constraints apply to the indexed morpheme alone, such unattested long-distance effects are excluded.

I show that both indexed markedness and faithfulness constraints are required to account for the data in Slovenian. Indexed markedness constraints have been previously proposed for exceptional morphology by Pater (2000, 2007, 2009), Flack (2007), and Gouskova (2007). For example, Flack (2007) shows that nuclei in Dinka verbal roots are maximally bimoraic, while in morphologically complex verbs they may also be trimoraic, requiring the ranking of MAX-μ above the constraint against trimoraic nuclei in verbal roots (*$V_{μμμ}$). Yet the benefactive morpheme conforms to the bimoraic nuclei limit, requiring an indexed markedness constraint *$V_{μμμ\text{-BEN}}$ ranked above MAX-μ. Here, I extend indexed markedness constraints to loanword phonology.

2 Native Words

First, I examine the distribution of front vowels in Standard Ljubljana Slovenian (my dialect; henceforth, Slovenian). I focus on the relationship between two lexical strata: native words and fully assimilated loanwords.

The loanwords come from a large corpus of neologisms (approximately 40,000 items), which was partially published by Gložančev and Kostanjevec (2006). These loanwords are predominantly from English, and most of them first appeared in Slovenian texts after 1990. Although many transcriptions in this squib are based on the *Slovenian Orthographic Dictionary* (Toporišič 2001), all pronunciations were verified in consultation with seven native speakers, all of whom have some command of English.

2.1 Mid Vowels

In native Slovenian words, there are nine contrastive vowels in stressed syllables (Jurgec 2005, 2006). The distribution of [ɪ] is predictable and never contrastive. The vowels are presented in table 1.[2] As the table shows, the RTR distinction is neutralized in unstressed syllables.

[2] Here I consistently use the binary [±RTR] feature to refer to Slovenian vowels; the analysis does not hinge on whether the relevant feature is [ATR] or [RTR], either privative or binary.

Table 1
Slovenian vowel inventory with the relevant features

			Stressed			Unstressed		
			+front	−front		+front	−front	
+high	−low	−RTR	i		u	i		u
		+RTR	(ɪ)					
−high	−low	−RTR	e		o	e	ə	o
				ə				
		+RTR	ɛ		ɔ			
	+low	−RTR		ʌ			a	
		+RTR		a				

In the remainder of this squib, I limit the discussion to the front vowels {i, ɪ, e, ɛ}.

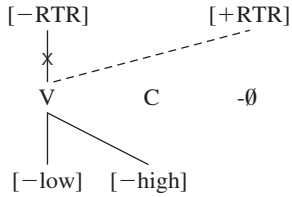
The RTR value of stressed vowels is kept constant throughout the paradigms of the majority of morphemes, although there are a number of words that have [+RTR] mid vowels when the word appears in certain cases (e.g., in the nominative), but [−RTR] vowels when the word appears with all other cases, as shown in table 2. The nonalternating roots—classes I and II—have an underlyingly linked [−RTR] or [+RTR] feature, respectively. I attribute the alternation in class III to a floating [+RTR] on the nominative affix of that paradigm, which links to the rightmost root vowel, delinking the original [−RTR], as in (1).[3]

Table 2
Native paradigms

	I Always {e, o}		II Always {ɛ, ɔ}		III Alternating {e/ɛ, o/ɔ}	
NOM.SG	sʊet	most	lɛt	gɔst	sʊet	gɔst
GEN.SG	'sʊet-a	'most-a	'lɛt-a	'gɔst-a	'sʊet-a	'gozd-a
LOC.SG	'sʊet-u	'most-u	'lɛt-u	'gɔst-u	'sʊet-u	'gozd-u
GEN.PL	'sʊet-ow	'most-ow	'lɛt-ow	'gɔst-ow	'sʊet-ow	'gozd-ow
	'world'	'bridge'	'flight'	'guest'	'council'	'forest'

[3] Note that a floating [+RTR] can also appear with a segmentally realized derivational suffix, for example, ['gɔzd-ək] 'small forest'. Thus, the REALIZE-MORPHEME constraint (Kurisu 2001) that enforces nonzero surface realization of morphemes is not sufficient to explain the attested patterns.

(1) *Nominative singular of class III words in the native vocabulary*



In terms of constraints, the alternations in mid vowels suggest that MAX([+RTR]) outranks the relevant markedness constraint *[+RTR, −high, −low] (abbreviated as *ɛ/ɔ). The ranking is illustrated in (2); the nominative suffix has a floating [+RTR], which docks on the root vowel. The winning candidate (2b) satisfies MAX([+RTR]), but violates *ɛ/ɔ. Note that the same ranking allows underlying {ɛ, ɔ} to surface faithfully.

(2) *gɔst 'forest'*

[+RTR] /gost- Ø /	MAX([+RTR])	*ɛ/ɔ
a. [gost]	*!	
b. ☞ [gɔst]		*

The absence of RTR alternations in high vowels is due to the constraint *[+RTR, +high] (henceforth, *ɪ): high vowels have a raised tongue body, which normally results in an advanced tongue root; hence, the combination of [+high] and [+RTR] is dispreferred (Archangeli and Pulleyblank 1994, McCarthy 1997). Thus, *ɪ must be ranked higher than MAX([+RTR]). The ranking is shown in (3); the winning candidate (3a) violates MAX([+RTR]) but satisfies the high-ranked *ɪ, as opposed to (3b), which violates *ɪ but satisfies MAX([+RTR]). The ranking in (3) also maps forms with an underlying /ɪ/ to [i].

(3) *miʃ 'mouse'*

[+RTR] /miʃ- Ø /	*ɪ	MAX([+RTR])
a. ☞ [miʃ]		*
b. [mɪʃ]	*!	

2.2 Rhotic Laxing

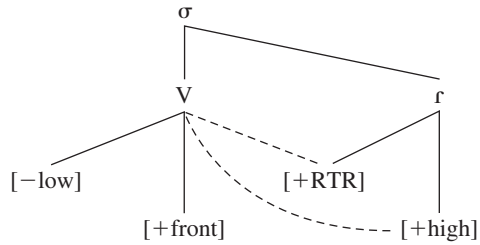
In this section, I present an alternation that affects stressed front vowels before a tautosyllabic [ɾ], a process I label *Rhotic Laxing*. As discussed in section 2.1, three front vowels are possible in stressed positions in native words: [i], [e], and [ɛ]—but not [ɪ]. However, all front vowels

neutralize to [ɪ] in stressed positions before a tautosyllabic tap, as shown in (4).

(4) i → ɪ / ['___ ɾ]$_\sigma$	/mi̲ɾ/	[mɪ̲ɾ]	'peace'	cf.	[mi̲'ɾu]	'peace.DAT'
	/ʃtʃi̲ɾ/	[ʃtʃɪ̲ɾ]	'daughter.ACC'	cf.	[ʃtʃi̲]	'daughter'
e → ɪ / ['___ ɾ]$_\sigma$	/me̲ɾ/	[mɪ̲ɾ]	'measure.GEN.PL'	cf.	[me̲'ɾilo]	'scale'
	/vɛ̲ɾ/	[vɪ̲ɾ]	'faith.GEN.PL'	cf.	[vɛ̲ro'vati]	'to have faith'
ɛ → ɪ / ['___ ɾ]$_\sigma$	/'sɛ̲ɾ-ji/	['sɪ̲rji]	'shit.IMPERAT.2SG'	cf.	['sɛ̲rem]	'shit.1SG'
	/pe't-ɛ̲ɾ/	[pe'tɪ̲ɾ]	'fifth'	cf.	[pe'tɛ̲ro]	'fifth.ACC'

As demonstrated in (3), [ɪ] generally cannot surface, since *ɪ outranks MAX([+RTR]). In the position before a tap, however, all front vowels in stressed positions neutralize to [ɪ]. Yet there is no single feature common to {i, e, ɛ} to the exclusion of [ɪ]. Thus, Rhotic Laxing is spreading of two features—[+RTR] and [+high]—from a tautosyllabic [ɾ] to the preceding front vowel, as shown in (5).

(5) *Rhotic Laxing*



Although [+RTR] and [+high] are not normally analyzed as associated with [ɾ], there is phonetic support for such a representation. In terms of articulation, rhotics have effects on tongue root position *and* tongue height (Delattre and Freeman 1968, Delattre 1971). Walsh Dickey (1997) analyzes rhotics as compound gestures, much like affricates: during the articulation of an alveolar tap, first the tongue is retracted, followed by sublaminal contact and lowering to resting position. This explains why rhotics are both [+high] and [+RTR] at the same time, which is a marked feature combination in vowels (Archangeli and Pulleyblank 1994). Note that [+RTR] and [+high] can only spread to prominent (i.e., stressed) positions, while unstressed vowels remain unaffected (e.g., [si̲ɾ'nina] 'rennet' vs. [vɛ̲ɾ'jeti] 'to believe').[4]

I use Generalized Alignment (McCarthy and Prince 1993) to model the spreading of [+RTR] and [+high]: ALIGN([+RTR], L, rime, L) and ALIGN([+high], L, rime, L). I define the latter in (6), and a similar definition could be adopted for the former, mutatis mutandis.

[4] See Beckman 1998, Benua 1998, Crosswhite 2001, Smith 2005, and de Lacy 2006 for discussion and related cases in other languages.

(6) *ALIGN([+high], L, rime, L), abbreviated as AL-L([+hi])*
Assign a violation mark for every [+high] autosegment that is not left-aligned with the syllable rime.

The alignment constraints AL-L([+RTR]) and AL-L([+hi]) outrank *ɪ and the faithfulness constraint against linking [+high], DEP-LINK ([+high]), defined in (7).[5]

(7) *DEP-LINK([+high]), abbreviated as DEP-LINK([+hi])*
Let x_i be an input root node and x_o its output correspondent. Assign a violation mark iff x_o is associated with a feature [+high] and x_i is not.

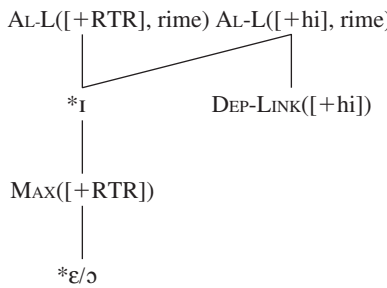
The ranking is illustrated in (8). The losing candidates—(8a), (8c), and (8d)—violate at least one of the two alignment constraints; the winner is candidate (8b), since it violates neither of them.

(8) *vɪr 'faith.GEN'*

/vɛr/	AL-L([+RTR])	AL-L([+hi])	DEP-LINK([+hi])	*ɪ
a. [vir]	*!		*	
b. ☞ [vɪr]			*	*
c. [vɛr]	*(!)	*(!)		
d. [vɛr]		*!		

The native ranking is given in (9). In the remainder of this squib, the ranking of *ɪ and *ɛ/ɔ with respect to MAX([+RTR]) and AL-L([+RTR]) will be shown to be relevant to loanwords.

(9) *Native ranking*



3 Loanwords

Slovenian loanwords can be grouped into two lexical strata, which I term *assimilated* and *unassimilated*. Unassimilated loanwords typi-

[5] See Morén 2001 for a full discussion of faithfulness constraints for association lines, and Blaho 2008 for an extension to segmental features.

Table 3
Avoidance of {ɛ, ɔ} in assimilated loanwords

Nonderived Unassimilated	Assimilated	Derived (GEN) Assimilated only	
flɛʃ	fleʃ	ˈfleʃa	‘flash’
wɔk/ʊɔk	ʊok	ˈʊoka	‘wok’
ɹɔk/ɾɔk	ɾok	ˈɾoka	‘rock’
ˈpɔdkast/ˈpɔtkast	ˈpotkast	ˈpotkasta	‘podcast’
ˈɛkstazi	ˈekstazi	ˈekstazija	‘ecstasy’

cally have multiple variant pronunciations (see Holden 1976 and Ito and Mester 2001 for a more detailed account of such variation in Russian and German) and cannot take suffixes (see Mascaró 2003 for Catalan). For example, while ‘Washington’ can have many variant pronunciations (e.g., [ˈwɔʃiŋktən ~ ˈʊɔʃiŋktən ~ ˈʊɔʃiŋkton ~ ˈʊaʃiŋkton]), only the fully assimilated form is possible in derived environments: [ˈʊaʃiŋkton-a] ‘GEN’. In addition to the distribution of mid vowels, there are a variety of other phonotactic differences between the two strata, including the distribution of {w, ɹ} (see table 3).

3.1 Mid Vowels

In assimilated loanwords, the [+RTR, −high, −low] vowels, {ɛ, ɔ}, are dispreferred (Toporišič 2000:52). Since {ɛ, ɔ} do occur in native words, their avoidance in loanwords is surprising.[6] The loanword pattern becomes evident if we compare unassimilated and assimilated loanwords. The former show that [ɛ] and [ɔ] can be borrowed into Slovenian, yet they are replaced by [e] and [o] in assimilated loanwords. For example, while both [flɛʃ] and [fleʃ] ‘flash’ are possible as bare roots, only the latter is possible in derived words, even though {ɛ, ɔ} occur in native words. Some further examples are given in table 3.

Only the relationship between fully assimilated loanwords (henceforth, loanwords) and native words is examined here. The avoidance of {ɛ, ɔ} in loanwords is attributed to the high-ranked constraint *[+RTR, −high, −low] (abbreviated as *ɛ/ɔ). Since these vowels map to {e, o}, the ranking required for loanwords is *ɛ/ɔ ≫ MAX([+RTR]), which is the opposite of the ranking for native words, MAX([+RTR]) ≫ *ɛ/ɔ, as was already shown to be the case in (9). I analyze this ranking paradox between native and foreign words by indexing the markedness constraint *ɛ/ɔ as *Foreign* and ranking it above MAX([+RTR]), as shown in (10) below. The indexed constraint $*\varepsilon/\mathfrak{o}_{\text{For}}$ applies only to loanwords, so that the ranking for native words remains unaffected.

[6] Kenstowicz (2005) terms the phenomenon in which loanwords are more restricted than native words *retreat to the unmarked*.

(10) *ɾok 'rock'*

/ɾɔk$_{For}$/	*ɛ/ɔ$_{For}$	MAX([+RTR])	*ɛ/ɔ
a. [ɾɔk]	*!		*
b. ☞ [ɾok]		*	

In the next section, I show that two other indexed constraints are needed in Slovenian.

3.2 Rhotic Laxing

Recall that Slovenian has three front vowels that can appear in stressed syllables when not followed by a tautosyllabic [ɾ]: {i, e, ɛ}. Furthermore, recall that these three vowels neutralize to [ɪ] before tautosyllabic [ɾ].

In loanwords, only two of the four front vowels—[i] and [e]—can occur in stressed syllables, except before [ɾ], where [e] becomes [ɛ], as shown in (11). For example, /ˈpe̲ɾ.la/ 'pearl' maps to [ˈpe̲ɾ.la] and not *[ˈpɪ̲ɾ.la] as in native words. [ɪ] never appears in loanwords. For instance, /li̲ɾ/ 'lyre.GEN.PL' surfaces as [li̲ɾ] rather than *[lɪ̲ɾ], which would be the case if it were a native word.

(11) e → ɛ / [ˈ—— ɾ]$_{\sigma}$ *i* is not affected

/ˈpe̲ɾl-a/	[ˈpɛ̲ɾla]	'pearl'	cf. [pe̲ɾˈlit]	'perlite'
/ˈʋe̲ɾz-a/	[ˈʋɛ̲ɾza]	'verse.GEN'	cf. [ʋe̲ɾˈzalka]	'versal'
/li̲ɾ/	[li̲ɾ]	'lyre.GEN.PL'	cf. [ˈli̲ɾski]	'lyrical'
/suʋeˈni̲ɾ/	[suʋeˈni̲ɾ]	'souvenir'	cf. [suʋeˈni̲ɾja]	'GEN'

The data show that mid vowels in loanwords participate in alternations that are specific to loanwords. When we compare the native and loanword patterns, what we see is a disjunctive relationship. In stressed syllables not ending in [ɾ], loanwords have a subset of the vowels seen in the native vocabulary, since the loanwords never have [ɛ] in this environment. Additionally, in stressed syllables ending in [ɾ], loanwords show no overlap with native words, since both [i] and [ɛ] are found in this environment.

Rhotic Laxing has now been established as part of the phonology of both native words and loanwords, albeit in slightly different forms. As we saw in (5), the rule in native words spreads [+high] and [+RTR] leftward from the [ɾ]. In loanwords, however, the value of the feature [high] is not affected by this rule. Hence, the loanword grammar ranks DEP-LINK([+hi]) above AL-L([+hi], rime), which is the opposite of the native ranking. This way, the pressure to spread [+high] leftward is kept in check in loanwords by the prohibition against inserting an association line from [+high] to a root node.

Native words and loanwords require different rankings of these two constraints. Since our goal is to capture the phonology of the language with one grammar, we have to invoke constraint indexation. More specifically, the grammar proposed here includes not only DEP-LINK([+hi]) but also DEP-LINK([+hi])$_{For}$. The indexed constraint is high-ranked, as shown in (12), where it fatally penalizes the spreading of [+high] in candidates (12a) and (12b).

(12) *ˈvɛɾza* 'verse.*GEN*'

/ˈvɛɾz$_{For}$-a/	Dep-Link([+hi])$_{For}$	Al-L([+RTR])	Al-L([+hi])	*ɛ/ɔ$_{For}$
a. ['vɪɾza]	*!	*		
b. ['vɪɾza]	*!			
c. ['vɛɾza]		*!	*	
d. ☞ ['vɛɾza]			*	*

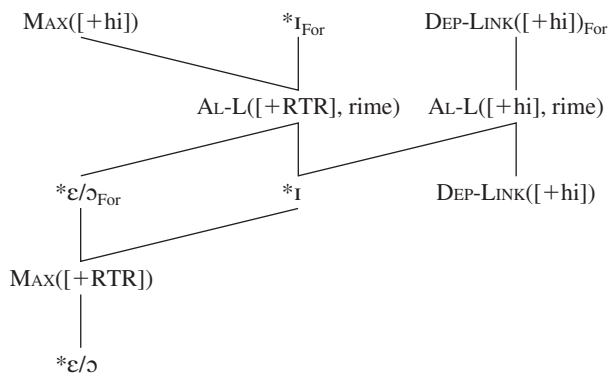
We saw in (5) that [+RTR] spreads leftward from [ɾ] in native words. In loanwords, this spreading is restricted to mid vowel targets: [+RTR] does not spread onto high vowels. The pattern would again suggest different rankings in native words and loanwords, a paradox that we solve by invoking indexed constraints. Since loanwords never contain [ɪ], the relevant constraint *ɪ$_{For}$ outranks the constraint responsible for spreading, Al-L([+RTR], rime), as illustrated in (13), where its effects are seen on candidate (13b).

(13) *liɾ 'lyre.GEN.PL'*

/liɾ$_{For}$/	Max([+hi])	*ɪ$_{For}$	Al-L([+RTR])	*ɪ
a. ☞ [liɾ]			*	
b. [lɪɾ]		*!		*
c. [leɾ]	*!		*	
d. [lɛɾ]	*!			

The total ranking is shown in (14). Note that this ranking has two indexed markedness constraints and one indexed faithfulness constraint.

(14) *Native and foreign ranking*



In the analysis here, I have assumed that native morphemes are not indexed, while foreign ones are. An alternative is to index native mor-

phemes rather than foreign ones. In some situations, this allows a system with indexed markedness constraints to be replaced by a system with indexed faithfulness constraints (Ito and Mester 1999, Inkelas and Zoll 2007). Consider for example the partial ranking *ɛ/ɔ$_{\text{For}}$ ≫ MAX([+RTR]) ≫ *ɛ/ɔ, which is equivalent to MAX([+RTR])$_{\text{Native}}$ ≫ *ɛ/ɔ ≫ MAX([+RTR]) if the native stratum were indexed instead. Both rankings give the same result, in which native words contrast {e, ɛ, o, ɔ}, while loanwords contain just {e, o}. However, this solution only works if there are only *faithfulness* constraints between the indexed *markedness* constraint and its nonindexed counterpart, such as *ɛ/ɔ$_{\text{For}}$ ≫ MAX([+RTR]) ≫ *ɛ/ɔ. When the middle constraint is also a markedness constraint, no translation into indexed faithfulness constraints is possible. In the ranking in (14), two markedness constraints are ranked below two pairs of indexed constraints and their nonindexed counterparts: AL-L([+hi]) and AL-L([+RTR]). For example, AL-L([+RTR]) is ranked below *ɪ$_{\text{For}}$, but above *ɪ. If one were to analyze the data by designating loanwords as nonindexed and native morphemes as indexed, two indexed markedness constraints would be required regardless, just as many as in the current analysis. Hence, indexed markedness constraints cannot be avoided.

4 Conclusion

This squib presents a case of disjunctive distribution in loanword phonology. More specifically, Slovenian front vowels have a disjunctive distribution in the native and foreign strata, since there is no overlap between the sets of vowels appearing before tautosyllabic [ɾ] in native words and loanwords. Such distributions are directly relevant to the theory of lexical indexation since they require indexed markedness constraints in addition to indexed faithfulness constraints.

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Across-the-Board and Parasitic Gap Constructions in Romanian

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1 Introduction

Many authors have argued that parasitic gap (PG) constructions, illustrated in (1), are the same as across-the-board (ATB) constructions, illustrated in (2).[1]

(1) What did you file *e* without reading *e*?

(2) Which paper did John file *e* and Mary read *e*?

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[1] In (1) and (2), *e* merely indicates a gap (trace, unpronounced copy, or parasitic gap). See Nunes 2004 for arguments that the parasitic gap is in fact a copy of a moved element.