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Syllable Contact and Emergent Lenition in Bashkir

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Abstract. This study examines the syllable contact phonology of Bashkir (Kipchak Turkic, southern Urals, Russia) and proposes an Optimality Theoretic analysis, drawing on previous approaches to syllable contact in other Turkic languages (Baertsch & Davis 2001, 2004, Gouskova 2001, 2004, Washington 2010). Like many Turkic languages, Bashkir desonorizes affix-initial coronal sonorants (/qullar/ → [qul.dar]) to mandate compliance with the Syllable Contact Law (Davis, 1998). This occurs even at boundaries which would otherwise exhibit falling sonority, thereby maximizing sonority fall. Bashkir also exhibits a unique continuancy alternation pattern in desonorized affixes (*taw-ðar, uram-dar, gaz-dar*). This study adopts the Syllable Contact Hierarchy analysis proposed in Gouskova (2004), with ranking of relevant faithfulness constraints below all *DIST constraints mandating maximal sonority fall. It is proposed that continuancy alternations are derived from a lenition process, otherwise blocked by high-ranking faithfulness constraints, but emergent when unfaithfulness is forced in order to satisfy constraints on syllable contact.

Keywords. Bashkir; Bashqort; syllable contact; phonology; Turkic; lenition

1. Introduction. This paper examines the syllable contact phonology of Bashkir (also known by its endonym *Bashqort*[1]), a Kipchak Turkic language spoken in Russia, primarily in the Republic of Bashqortostan, in the southern Ural Mountains, where it is co-official with Russian. Bashkir syllable contact phonology shares many commonalities with other Turkic languages, but also exhibits unique features which have not been fully analyzed in previous treatments. This paper provides an overview of the Bashkir data and proposes an Optimality Theoretic analysis, drawing on previous approaches to syllable contact in Turkic (Baertsch & Davis 2001, 2004, Gouskova 2001, 2004, Washington 2010).

Sonority is generally understood as a hierarchical classification of speech sounds according to something like loudness or intensity (see Parker 2011 for an overview). Typically, vowels are understood as the most sonorous, followed by (in decreasing order of sonority) glides, rhotics, liquids, nasals, and obstruents. Individual languages may make more or less fine distinctions along this scale. Cross linguistically, many languages show a preference for falling sonority across a syllable boundary and exhibit phonological alternations which serve to repair bad syllable contact, a generalization termed the Syllable Contact Law (Davis, 1998). Many Turkic languages of roughly the northern and eastern parts of the Turkic speaking areal are known to exhibit sensitivity to the Syllable Contact Law (Baertsch & Davis, 2004, see Washington, 2010,

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[1] An anonymous reviewer questioned the use of the exonym 'Bashkir', which is based on the Russian name of the language (*başkirskij*), instead of the endonym *Bashqort.* The choice to use 'Bashkir' was based on the impression that it is, based on the author's experience, the more commonly used term by speakers to refer their language when speaking or writing English, with the term predominating in Bashkir-English dictionaries, phrasebooks, and textbooks produced by and for native Bashkir speakers, and in English-language signs, names of institutions, official documents, and translations of academic literature within Bashqortostan. The author apologizes to any speakers who might have preferred that the native name be used instead.

§5.3 for details on geographic distribution). This can be seen in the behavior of inflectional suffixes which begin with coronal sonorants, such as the plural suffix /-lAr/.[2] When suffixed to a stem ending in a consonant of lesser or equal sonority, the initial consonant of this affix is desonorized to [d], thereby creating falling sonority across the syllable boundary. Hence, a word such as /qul-lAr/ 'arms' will surface as [qul.dar].

Bashkir exhibits a desonorization pattern similar to the one described above. However, it also exhibits a unique pattern wherein desonorized coronals may surface as either a voiced coronal stop [d], a voiced interdental fricative [ð], or a voiceless coronal stop [t] (hereafter, collectively [D]), depending on the value of the preceding consonant. Previous investigations have analyzed this phenomenon as assimilation for the feature [continuant] between the stem-final segment and the affix (Davis & Baertsch, 2004; Washington, 2010). This paper proposes instead to analyze continuancy alternations as the outcome of lenition. Lenition of voiced coronal obstruents is widely attested in the diachronic phonology of Bashkir. It is proposed here that this same process is still active in the synchronic phonology, but the constraints driving it are crucially dominated by relevant faithfulness constraints. However, when unfaithfulness in the affix is independently forced by the grammar in order to repair marked syllable contact, lenition occurs, representing a case of Emergence of the Unmarked (McCarthy & Prince, 1994).

The structure of this paper is as follows. Section 2 provides an overview of the syllable contact phonology of Bashkir. Section 3 examines previous formal approaches and proposes an Optimality Theoretic analysis of the phenomenon. Section 4 concludes.

2. Syllable contact in Bashkir. Like many other Turkic languages, Bashkir is sensitive to the Syllable Contact Law and uses desonorization in affix-initial sonorants as a way of maximizing sonority fall across a syllable boundary. When an inflectional suffix beginning with a coronal sonorant is attached to a stem ending in a vowel, then the suffix surfaces faithfully, as can be seen in the data in (1).

(1)	/bala-lAr/	[balalar]	'children'
	/qala-lAr/	[qalalar]	'cities'
	/terpe-lAr/	[terpelær]	'hedgehogs'

However, whenever a coda is present in the preceding syllable, the initial coronal sonorant of the suffix is desonorized to an obstruent, as can be seen in (2), where the plural suffix is appended to stems ending in lateral or nasal sonorants.

(2)	/qul-lAr/	[quldar]	'arms'
	/uram-lAr/	[uramdar]	'streets'
	/bajram-lAr/	[bajramdar]	'holidays'

After glides, rhotics, and the voiced interdental fricative (/w, j, r, ð/), affix-initial coronals surface desonorized and as continuants.

[2] In much of the literature, capital letters are used to indicate underspecified vowels which vary according to vowel harmony. The symbol /A/ may represent [ɑ] or [æ] depending on harmony. Note also that in Bashkir the original high vowel series has lowered to something like [ɪ ʏ ʊ ʊ̈]. These are represented in Bashkir orthography as <е ө ы о>. For the sake of simplicity, this paper follows Bashkir orthography in representing this set as /e ø ɯ o/ and an underspecified member of this set as /E/, despite the obvious asymmetry. Finally, as noted again in the main text, this paper uses [D] to represent any of the desonorized allophones of an affix-initial coronal sonorant, i.e. [d], [ð], or [t] derived from /l, n/.

(3) /taw-lAr/ [tawðar] ‘mountains’
/taj-lAr/ [tajðar] ‘foals’
/hɯjɯr-lAr/ [hɯjɯrðar] ‘cows’
/qað-lAr/ [qaððar] ‘geese’

Note also from this group that affix-initial coronals desonorize even in cases where falling sonority would result, as is the case with a glide or rhotic followed by a lateral.[3] Hence, desonorization serves not only as a repair for bad syllable contact, but also as a way of maximizing sonority fall across a syllable boundary.

The aforementioned continuancy alternation is lost after voiceless obstruents. After both voiceless stops and voiceless fricatives, affixes surface consistently with initial voiceless stops, as shown in (4).

(4) /at-lAr/ [attar] ‘horses’
/barmaq-lAr/ [barmaqtar] ‘fingers’
/aɣas-lAr/ [aɣastar] ‘trees’
/duθ-lAr/ [duθtar] ‘friends’

A similar neutralization pattern is seen after other non-sibilant voiced fricatives (/z, ʒ/), which are consistently followed by a voiced stop, as seen in (5). The data with /z/ have not been considered in previous analyses of Bashkir continuancy alternations and, as discussed in section 2.3, have significant implications for how the phenomenon is analyzed.

(5) /taʒ-lAr/ [taʒdar] ‘crowns’
/gaz-lAr/ [gazdar] ‘gasses’
/ʁæziz-lAr/ [ʁæzizdær] ‘beloveds’

The exact processes targeting affixes beginning with lateral sonorants are also observable in affixes beginning with nasals, as seen below in (6), with the genitive suffix.

(6) /taw-nEŋ/ [tawðɯŋ] mountain-GEN
/qul-nEŋ/ [quldɯŋ] arm-GEN
/duθ-nEŋ/ [duθtɯŋ] friend-GEN

Also differing from some other Kipchak languages, desonorization in Bashkir exclusively targets coronal segments. This can be seen in the data in (7), wherein labial sonorants surface faithfully in a rising-sonority environment.

(7) /juq-mE/ [juqmɯ] *juqpɯ
absent-INT ‘isn’t there any…?’
/kit-mA-j/ [kitmæj] *kitpæj
leave-NEG-PRES ‘(s)he isn’t leaving’

Finally, it should be noted that desonorization only occurs as part of the inflectional morphology and does not affect derivational affixes beginning with coronal sonorants. In this respect as well, Bashkir differs from some other Kipchak languages, such as Kyrgyz. This is seen below in (8), where the initial /l/ of the derivational suffix /-lEk/ does not desonorize, even if the final segment of the preceding stem is lower in sonority.

[3] Although only /l/ initial affixes have been considered up to this point, /n/ initial affixes behave identically to /l/ initial affixes in Bashkir, as seen below in the data in (6).

(8) /hyð-lEk/ [hyðlek] ‘dictionary’ *hyððek

The lack of desonorization in derivational affixes and the fact that the process targets only coronals will not be examined in depth in this paper. Both phenomena are relatively unremarkable typologically, but the challenges of how best to incorporate these limitations on desonorization into the present analysis have not been fully explored and constitute an area for further research.

A summary of the Bashkir data is given below in table 1.

Final Segment of Stem	Surface Value for /l/	Surface Value for /n/
V	[l]	[n]
[w, j, r, ð]	[ð]	
[m, n, l], [z, ʒ]	[d]	
$C_{[-voice]}$	[t]	

Table 1: Summary of Bashkir data

Having provided an overview of the data, §3 reviews previous formal approaches to syllable contact in Turkic and to the Bashkir data specifically, and provides an Optimality Theoretic analysis of the data.

3. Formal Analysis. This section will turn to the question of how best to formally analyze the data presented in §2. Two primary questions arise in regard to the Bashkir syllable contact pattern. The first is how to account for a syllable contact pattern wherein desonorization serves to maximize sonority fall, rather than simply repairing bad syllable contact. The second question is how to account for the distribution of the voiced coronal stop, voiced interdental fricative, and voiceless coronal stop allophones of coronal-initial affixes. Section 3.1. examines previous approaches to syllable contact in Turkic, while §3.2. presents this paper’s proposal for syllable contact in Bashkir. Section 3.3 reviews previous approaches to continuancy alternations in Bashkir, while section 3.4 advances a new proposal of how to analyze this phenomenon.

3.1. PREVIOUS APPROACHES TO SYLLABLE CONTACT. Davis (1998, pg. 189), following Vennemann (1988), proposes two constraints reflecting the cross-linguistic preference for falling sonority across a syllable boundary: Syllable Contact Law and Syllable Contact Slope. The definitions of these constraints are given below in (9).

(9) a. Syllable Contact Law (SYLLCON): Avoid rising sonority over a syllable boundary. Prohibits sonority rises.
b. Syllable Contact Slope (SCS): Have falling sonority over a syllable boundary. Prohibits sonority rises or sonority plateaus.

SCS represents a more stringent restriction than SyllCon, as SCS mandates that sonority must fall across a syllable boundary, while SYLLCON only prohibits sonority across a syllable boundary from rising. Violations of SYLLCON are therefore a subset of those of SCS.

In his analysis of the syllable contact phonology of Kazakh, Davis proposes that desonorization is driven by the ranking of SCS above relevant faithfulness constraints. As alternations are seen only in the affix and never in the root, this motivates a ranking of FAITH-[ROOT] above FAITH-[ONSET]. As both sonority plateaus and sonority rises are repaired through desonorization, SYLLCON may be ranked low. These rankings can be seen in tableau 1 below, adapted from Davis (1998).

/qol-lAr/ ‘arm’-PL	SCS	FAITH-[ROOT]	FAITH-[ONSET]	SYLLCON
a. qol-lar	* !			
☞ b. qol-dar			*	
c. qoj-lar		*!		

Tableau 1: SCS, FAITH-[ROOT] >> FAITH-[ONSET], SYLLCON

In order to account for the appearance of a voiceless stop after stems ending in voiceless consonants, Davis proposes an undominated constraint VOICING, given below in (10).

(10) VOICING: adjacent obstruents share a voice feature (Davis, 1998).

The effect of this constraint with a stem ending in a voiceless consonant can be seen in tableau 2.

/at-lAr/ ‘horses’	VOICING	SCS	FAITH-[ROOT]	FAITH-[ONSET]	SYLLCON
a. at-lar		*!			*
b. at-dar	*!			*	
c. aj-lar			*!		
☞ d. at-tar				*	

Tableau 2: Effect of Constraint VOICING

Note that this proposal on its own is unable to account for the type of alternation seen in Bashkir, wherein repair strategies not only serve to repair bad syllable contact, but to maximize sonority fall. That is, it does not account for the fact that e.g. [qul.dar] is better than *[qul.nar], and it does not account for cases wherein desonorization occurs even when a sonority fall is already present, e.g. Bashkir /taw-lAr/ → [taw.ðar]. This can be seen in tableau 3 below.

/taw-lAr/ ‘mountains’	VOICING	SCS	FAITH-[ROOT]	FAITH-[ONSET]	SYLLCON
💣 a. taw-lar					
b. taw-nar				*!	
☹ c. taw-ðar				*!	

Tableau 3: Wrong winner predicted when sonority fall already present

In tableau 3, the faithful candidate, which already contains a sonority fall, is wrongly predicted to the winner (indicated with 💣). Meanwhile, the intended winner [taw.ðar] (indicated with ☹) is not only excluded for unnecessarily violating FAITH-[ONSET], but does not perform any better than the ungrammatical form *[taw.nar].

A solution to this problem is proposed by Gouskova (2001, 2004). She proposes a harmonic scale, a set of constraints with a universally fixed ranking, defining preferred syllable contact.

This scale, as shown in figure 2, is based on the following proposed sonority hierarchy, with each class division along the hierarchy assigned a number.

Glides		1
Liquids	Rhotics	2
	Laterals	3
Nasals		4
Obstruents	Voiced fricatives	5
	Voiced stops	6
	Voiceless fricatives	7
	Voiceless stop	8

Table 2: Proposed Sonority Hierarchy (Gouskova, 2004)

Based on the scale in table 2, the following hierarchy of preferred and disprefered syllable contact combinations, given below in table 3, may be derived by subtracting the class number of the first segment in the sequence from that of the second segment. A higher number at the bottom of the row represents a greater fall in sonority and hence a better instance of syllable contact.

w.t	w.s	w.d	w.z	w.n	w.l	w.r	w.w	r.w	l.w	n.w	z.w	d.w	s.w	t.w
	r.t	r.s	r.d	r.z	r.n	r.l	r.r	l.r	n.r	z.r	d.r	s.r	t.r	
		l.t	l.s	l.d	l.z	l.n	l.l	n.l	z.l	d.l	s.l	t.l		
			n.t	n.s	n.d	n.z	n.n	z.n	d.n	s.n	t.n			
				z.t	z.s	z.d	z.z	d.z	s.z	t.z				
					d.t	d.s	d.d	s.d	t.d					
						s.t	s.s	t.s						
							t.t							
-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7

Table 3: The Syllable Contact Scale (reproduced from Gouskova 2004, p.211, w=glide, r=rhotic, l=lateral, n=nasal, z=voiced fricative, d=voiced stop, s=voiceless fricative, t=voiceless stop)

The scale in table 3 may be translated into a fixed hierarchy of universally ranked constraints, shown in (11).

(11) *Dist+7 >> *Dist+6 >> *Dist+5 >> *Dist+4 >> *Dist+3 >> *Dist+2 >> *Dist+1 >> *Dist 0 >> *Dist-1 >> *Dist-2 >> *Dist-3 >> *Dist-4 >> *Dist-5 >> *Dist-6 >> *Dist-7

Degree of tolerated sonority rise in a language is modelled by the ranking of relevant faithfulness constraints along this scale.

Before moving on, it is worth briefly touching upon an alternative analysis on how to derive maximum sonority fall under syllable contact in Turkic languages, proposed in Washington (2010). Under this analysis, a hierarchy of constraints restricting permissible onsets, referred to as the *ONSET/X hierarchy (i.e. *ONSET/J >> *ONSET/R >> *ONSET/L etc.), together with ID-[SON] and other relevant faithfulness constraints, force resyllabification of marked onsets after vowels into the coda of the preceding syllable. Following a consonant, however, high-ranked *COMPLEXCODA makes this resyllabification impossible, forcing marked onsets to be repaired

through desonorization or some other process, violating ID-[SON]. Although conceptually slightly different, this analysis also adequately accounts for the data.[4]

3.2. PROPOSED ANALYSIS OF SYLLABLE CONTACT IN BASHKIR. This paper adopts the syllable contact hierarchy model of Gouskova (2004) described above. The following sonority scale is proposed for Bashkir. Note that although Gouskova's model makes a sonority distinction between obstruents according to voicing and constituency, this division does not seem to be borne out by the Bashkir data.

Glides		1
Liquids	Rhotics	2
	Laterals	3
Nasals		4
Obstruents		5

Table 4: Proposed sonority scale for Bashkir

Applying Gouskova's *DIST scale to Bashkir, the relevant faithfulness constraint, ID-[SON], must be ranked below the lowest *DIST constraint - *DIST-4 in the present sonority scale - meaning that all syllable contact environments will trigger desonorization. In tableau 4 below and elsewhere, only constraints relevant to the analysis will be shown.

/qul-lAr/ 'arms'	*DIST+0	*DIST-1	*DIST-4	ID-[SON]
a. qul-lar	* !			
b. qul-nar		*!		
☞ c. qul-dar			*	*

Tableau 4: *DIST-2 >> ID-[SON]

This analysis adopts undominated VOICING from Davis (1998), as shown in tableau 5.

/at-lAr/ 'horses'	VOICING	*DIS+2	*DIST+0	ID-[SON]
a. at-lar		*!		
b. at-dar	*!			*
☞ c. at-tar			*	*

Tableau 5: VOICING undominated

3.3. PREVIOUS ANALYSES OF CONTINUANCY ALTERNATION IN BASHKIR. Davis and Baertsch (2001, 2004) analyze the syllable contact allomorphy observed in Bashkir as the consequence of a high ranked constraint IDENTICAL-CONSONANT-CLUSTER-[continuant], given in (12).

[4] An anonymous reviewer points out that the Split-Margin Approach to the Syllable (Baertsch 2002, Davis & Baertsch 2008) can also be applied to syllable contact. Although certainly able to account for the data, the Split-Margin approach is more complex than is necessary for present purposes, and hence is not addressed further. See above citations for more on the Split-Margin approach.

(12) IDENTICAL-CONSONANT-CLUSTER (ICC) – [continuant]: A sequence of consonants must be identical in the feature [± continuant]

Continuancy alternations in Bashkir then are understood as a sort of assimilation for the feature [± continuant] between the final consonant of the stem and the initial consonant of the affix. Washington (2010) follows them in adopting this constraint as the driving force behind continuancy alternations in Bashkir.

Clearly, this analysis goes a long way in accounting for the Bashkir data. For stems ending in sonorants, the value for the feature [± continuant] lines up perfectly between the final segment of the stem and the first consonant of the affix. Table 5 below provides a summary of continuancy values after sonorant-final stems.

Class of Sound in Stem	Following Segment	Stem [±continuant]	Affix [±continuant]
Glides /w, j/	ð	+	+
Rhotic /r/	ð	+	+
Lateral /l/	d	-	-
Nasal /m, n, ŋ/	d	-	-

Table 5: Affix agreement before sonorants

The problem arises when one considers data from the obstruents. The voiced interdental /ð/ triggers an affix with /ð/, while all other obstruents, regardless of continuancy, trigger a stop. This can be seen in table 6.

Class of Sound in Stem	Following Segment	Stem [±continuant]	Affix [±continuant]
Voiced Interdental /ð/	ð	+	+
/z, ʒ/	d	+	-
Voiceless Fricatives	t	+	-
Voiceless Stops	t	-	-

Table 6: Affix agreement following obstruents

An analysis based on continuancy assimilation is unable to account for the discrepancy between, for example, [qað.ðar] ‘geese’ and [gaz.dar] ‘gasses’. It also cannot account for why voiceless obstruents never participate in continuancy alternations. For example, why is the plural of [duθ] ‘friend’ [duθ.tar] and not something like *[duθ.θar]?

3.4. PROPOSAL FOR CONTINUANCY ALTERNATIONS IN BASHKIR. This paper proposes that Bashkir continuancy alternations are better analyzed as the result of a lenition process targeting voiced coronal plosives. Continuancy alternations are not driven by assimilation *per se*, but rather serve to limit the surface occurrence of [d]. This analysis has the advantage of accounting for parallels between the diachronic and synchronic phonology of Bashkir and, more crucially, provides a unified of account for the discrepancy between the voiced and voiceless series of coronal obstruents, i.e. why [t] lacks a [+continuant] counterpart.

To review, the interdental allophone appears in Bashkir affixes following stems ending in the glides /w, j/, the rhotic /r/, or another /ð/. These environments largely coincide with the

environments in which historical Bashkir */d/ was lenited to /ð/. See table 7 below for a summary of environments in which /ð/ is found in native Turkic vocabulary or Perso-Arabic borrowings, descending from historical */d/.

Environment	Modern Bashkir word	Source	Gloss
Intervocalically	[iðel]	*idel	'Volga'
Following glides /w, j/	[fajða]	Arabic /fajda/	'use'
Following /r/	[pærðæ]	Persian /parde/	'curtain'

Table 7: Environments for lenition of */d/ to /ð/

The only discrepancy between the two is the intervocalic environment, wherein desonorization does not occur, since there is no syllable contact to drive it, and hence no parallel would be expected.[5]

Conversely, the environments in which [d]-initial affixes appear under desonorization, after /l, n, m/ or /z, ʒ/, parallel the environments wherein */d/ was historically maintained as /d/ and was not lenited. This can be seen in table 8.

Environment	Modern Bashkir word	Source	Gloss
Word initially	[dawam]	Arabic /dawaːm/	'continuation'
Following later /l/	[ɑldɑqsɯ]	*/ɑldɑqsɯ/	'liar'
Following nasal /n, m/	[køndøð]	*/køndøz/	'during the day'
Following voiced fricative /z, ʒ/	[aʒdaha]	Persian /aʒdaha/	'dragon'

Table 8: Environments for retention of /d/ from */d/

Finally, the fact that [D] when devoiced always becomes [t] and does not participate in continuancy alternations also finds reflection in the diachronic data. Bashkir devoices voiced obstruents word finally. Historical */d/ which underwent final devoicing is retained as [t] and is not lenited. This can be seen in borrowings such as [iqtisat] 'economics', from Arabic /iqtisad/. Meanwhile, historical underlying /t/ is retained in all environments.

The parallels between the environments for lenition of historical */d/ and the distribution of allophones under desonorization are striking enough to suggest that the two are in fact the same process, and that lenition is not merely historical but is also active in the synchronic grammar. Modern Bashkir does have surface level [d] in historical lenition environments, introduced through recent borrowings from Russian (consider a word like [pomidor] 'tomato', with intervocalic [d]). However, lenition can still be a synchronically active process, with the constraints driving it merely dominated by relevant faithfulness constraints. For the present analysis, two constraints are proposed. *VOICEDPLOSIVE (*VOIPLOS), is proposed as motivating lenition. Meanwhile, ID-VOICEDPLOSIVE crucially dominated *VOIPLOS, restricting the occurrence of lenition. Both constraints are defined below in (13).

[5] Note incidentally that Bashkir has not retained any underlyingly /d/-initial affixes, all of them having been reanalyzed with underlying initial sonorants. The locative case suffix is /lA/, while the ablative case suffix and definite past tense endings have underlying initial /n/. Hence, affixes beginning with initial coronal obstruents are only possible as the outcome of desonorization. Thank you to an anonymous reviewer for pointing this out.

(13) *VOICEDPLOSIVE (*VOIPLOS): No voiced coronal plosives (/d/). Assign a violation for each coronal plosive in the output.
IDENT-VOICEDPLOSIVE (ID-VOIPLOS): For every segment in the input whose features are [CORONAL, -sonorant, -continuant, +voice], its correspond in the output must have identical values for these features. Assign a violation for every voiced coronal plosive in the input whose correspondent in the output is not a voiced coronal plosive.

*VOIPLOS must in turn crucially dominate a general IDENT-[CONTINUANT], the definition of which is given below in (14).

(14) IDENT-[CONTINUANT] (ID-[CONT]): the value for [±continuant] on a segment in the input must be preserved in a correspondent of that segment in the output. Assign a violation for every segment in the output whose value for [±continuant] differs from its correspondent in the input.

At an earlier stage in the grammar of Bashkir, the ranking of these constraints must have been reversed. *VOIPLOS must have outranked both ID-VOIPLOS, as well as ID-[CONT], causing coronal plosives to lenite stem internally. In the synchronic grammar, however, *VOIPLOS is ranked low. Lenition of voiced coronals, driven by *VOIPLOS, remains present in the grammar of the language, but any underlying voiced plosive will surface faithfully in order to comply with higher-ranking ID-VOIPLOS. The effects of this ranking can be observed in tableau 6, shown below.

/pomidor/ 'tomato'	ID-VOIPLOS	*VOIPLOS	ID-[CONT]
☞ a. pomidor		*	
b. pomiðor	*!		

Tableau 6: underlying /d/ surfaces faithfully

However, desonorized affix-initial segments are underlyingly sonorants /l, n/, and hence ID-VOIPLOS plays no role in selecting between candidates. As seen in tableau 7 below, although low-ranked, *VOIPLOS plays the crucial role in selecting between a [ð] and [d] as the correct allophone of [D]. However, as in tableau 6 above, underlying /d/ in tableau 7 below surfaces faithfully in order to avoid violating high ranked ID-VOIPLOS.

/pomidor-lAr/ 'tomatoes'	ID-VOIPLOS	*DIST-1	*DIST-3	*VOIPLOS	ID-[CONT]	ID-[SON]
a. pomidor-lar		*!		*		
b. pomidor-dar			*	**!		*
☞ c. pomidor-ðar			*	*	*	*
d. pomiðor-ðar	*!				**	*

Tableau 7: Underlying /d/ surfaces faithfully, but [D] undergoes lenition

This same ranking is able to account for the other environments in which [D] surfaces as [ð], namely after /w, j/ and /ð/ . This is shown in tableaux 8-10.

/taw-lAr/ ‘mountains	ID-VOIPLOS	*DIST-2	*DIST-4	*VOIPLOS	ID-[CONT]	ID-[SON]
a. taw-lar		*!				
b. taw-dar			*	*!		*
☞ c. taw-ðar			*		*	*

Tableau 8: *VOIPLOS with /w/ final stems

/aj-lAr/ ‘months, moons’	ID-VOIPLOS	*DIST-2	*DIST-4	*VOIPLOS	ID-[CONT]	ID-[SON]
a. aj-lar		*!				
b. aj-dar			*	*!		*
☞ c. aj-ðar			*		*	*

Tableau 9: *VOIPLOS with /j/ final stems

/qað-lAr/ ‘geese’	ID-VOIPLOS	*DIST-2	*DIST-0	*VOIPLOS	ID-[CONT]	ID-[SON]
a. qað-lar		*!				
b. qað-dar			*	*!		*
☞ c. qað-ðar			*			*

Tableau 10: *VOIPLOS with /ð/ final stems

Based on both the diachronic and the synchronic data, it is clear that this lenition process is blocked in certain environments, namely in word initial position and after /l, m, n/ and /ʒ/. In the synchronic grammar, it also appears that lenition is blocked following /z/.[6] As discussed in §3.3, the observation that [-continuant] allophones of [D] follow /l, m, n/ was the basis in Davis & Baertsch (2001, 2004) and Washington (2010) for analyzing the Bashkir data as continuancy assimilation, as /l, m, n/ are generally regarded to pattern as [-continuant][7], in contrast to /w, j, r/. However, as discussed before, an analysis wherein continuancy assimilation serves as the driving force behind Bashkir continuancy alternations fails to account for the behavior of [D] after obstruent-final stems – i.e. why [d] appears after [z, ʒ] and why [t] appears after all voiceless obstruents regardless of continuancy.

On the basis of these shortcomings, the author proposes a more cautious approach. Rather than a general ICC-[CONTINUANT] constraint, which seems to massively overpredict the occurrence of [+continuant] allophones, what is proposed here instead is a set of constraints which block the occurrence of lenition, *NĐ, *LĐ and *ZĐ. All three of these constraints appear to be undominated synchronically, and to have been so in earlier stages of Bashkir phonology as well. The definitions of these constraints are given below in 15.

[6] Note that lenition being blocked after /z/ is not attestable in the diachronic grammar, since */z/ in Bashkir became /ð/ in all environments.

[7] Note however that this fact should not necessarily be taken as a given; see e.g. Mielke (2005). Thank you to an anonymous reviewer for pointing out this source.

(15) *NÐ: No [ð] may follow a nasal consonant. Assign a violation for every [ð] in the output which follows a nasal consonant.
*LÐ: No [ð] may follow a lateral consonant. Assign a violation for every [ð] in the output which follows a lateral consonant.
*ZÐ: No [ð] may follow a voiced sibilant fricative consonant. Assign a violation for every [ð] in the output which follows a voiced sibilant fricative consonant.

To the author's knowledge, these constraints in the exact formulation given here have not been previously proposed elsewhere, but the blocking of lenition after laterals and nasals is well attested in many dialects of Spanish (Mascaro 1991, Piñeros 2002, Hualde et al. 2011, *inter alia*) and is well grounded phonetically. *ZÐ seems to be more idiosyncratic to Bashkir, perhaps related to maintenance of a phonemic contrast which would otherwise be easily neutralized in this environment, or perhaps relating to the status of /z/ and /ʒ/ as marginal phonemes. Further grounding for this constraint is an important area for further research.[8]

Note that continuancy assimilation, as proposed by previous analyses, may in fact play a role in in the phonetic grounding underlying *NÐ and *LÐ, and hence may in fact have a role to play in Bashkir phonology, albeit with the effect of restricting rather driving lenition.[9] However, the same cannot be said of *ZÐ, which has the opposite effect of compelling a continuancy mismatch. This mismatch, together with the continuancy mismatch seen following stems ending in voiceless fricatives ([duθ.tar], see more on this below), cannot be accounted for with a general continuancy assimilation constraint.

The effects of NÐ, *LÐ, and *ZÐ are illustrated below in tableaux 11-13.

/qul-lAr/ 'arms'	*LÐ	*DIST+0	*DIST-2	*VOIPLOS	ID-[CONT]	ID-[SON]
a. qul-lar		*!				
☞ b. qul-dar				*		
c. qul-ðar	*!		*			

Tableau 11: *LÐ >> *VOIPLOS

/urman-lAr/ 'forests'	*NÐ	*DIST+1	*DIST-1	*VOIPLOS	ID-[CONT]	ID-[SON]
a. urman-lar		*!				
☞ b. urman-dar			*	*		
c. urman-ðar	*!					

Tableau 12: *NÐ >> *VOIPLOS

[8] Note that, despite its unclear phonetic grounding, *ZÐ appears to have a long history in the phonology of Bashkir, as seen by the blocking of lenition diachronically in borrowings such as [aʒdaha] 'dragon', which does not become *[aʒðaha].

[9] Thank you to an anonymous reviewer for emphasizing the need to clarify this point.

/gaz-lAr/ ‘gasses’	*ZĐ	*DIST+2	*DIS+0	*VOIPLOS	ID-[CONT]	ID-[SON]
a. gaz-lar		*!				
☞ b. gaz-dar			*	*		*
c. gaz-ðar	*!		*		*	*

Tableau 13: *ZĐ >> *VOIPLOS

Returning to the issue of continuancy mismatches following stems ending in voiceless fricatives, note that while this phenomenon is not predicted in an analysis based on continuancy assimilation, it falls out naturally from an analysis based on lenition of /d/. Since continuancy alternations are driven by a constraint against surface-level voiced plosives, a voiceless stop [t] is able to satisfy the requirements of both *VOIPLOS and VOICING. The voiceless fricative [θ] also satisfies both constraints, but is excluded by low-ranking ID-[CONT][10]. This is illustrated below in tableau 14.

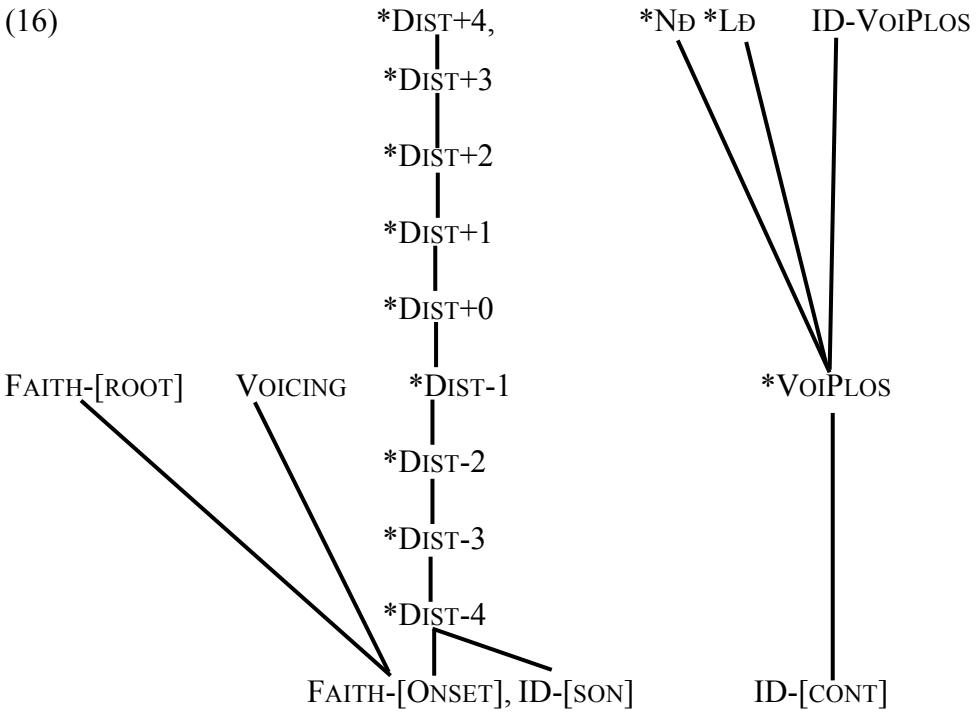
/duθ-lar/ ‘friends’	VOICING	*DIST+2	*DIST+0	*VOIPLOS	ID-[CONT]	ID-[SON]
a. duθ-lar		*!				
b. duθ-dar	*!		*			*
c. duθ-ðar	*!		*		*	*
d. duθ-θar			*		*!	*
☞e. duθ-tar			*			*

Tableau 14: Voiceless stops satisfy both VOICING and *VOIPLOS

A Hasse diagram, providing a summary of the final rankings for syllable contact in Bashkir is provided in (16) below.

[10] Admittedly, this part of the analysis does again rely on the assumption that /l, n/ pattern as [-cont.] in Bashkir. See fn. 7.

(16)



4. Conclusion. This paper has presented an overview of the data and an Optimality Theoretic analysis of the syllable contact phonology of Bashkir, a Kipchak Turkic language spoken in the southern Ural Mountains in Russia. Like many Turkic languages, Bashkir desonorizes coronal affix-initial sonorants in order to mandate maximal sonority fall across a syllable boundary. This is analyzed here using the Syllable Contact Scale (Gouskova 2001, 2004), a set of universally ranked constraints on preferred syllable contact, which, when ranked above ID-[SON], mandate desonorization in order to maximize sonority fall across a syllable boundary. Bashkir also exhibits a unique pattern of continuancy alternations in desonorized affix-initial sonorants, which may appear as [d], [ð], or [t], depending on the final consonant of the preceding stem. [d] follows laterals, nasals, or voiced sibilant fricatives (/z, ʒ/), [ð] follows glides, rhotics, and itself (/ð/), and [t] follows all voiceless obstruents. While previous treatments have proposed that these alternations as driven by continuancy assimilation, this paper proposes to analyze them as the outcome of constraint against surface [d] respected either through lenition to [ð] or (after voiceless obstruents) through devoicing to [t]. Lenition is blocked from affecting underlying /d/ by high-ranking ID-VOICEDPLOSIVE, but is free to affect desonorized segments which are underlyingly sonorants. Lenition is also blocked following laterals, nasals, and voiced sibilants (*NÐ, *LÐ, and *ZÐ), by constraints which are likely related to continuancy assimilation but not fully explicable in terms of it, and merit further research.

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