

24.901 Problem Set 4: An OT analysis of voicing assimilation of Russian

Below are some Russian voicing alternations. The forms on the left contain prefixed verbs, where the prefixes alternate in voicing. Those on the right contain phrases in connected speech or nouns/verbs that alternate in voicing. Your analysis should focus on the prefix alternations, but it should take into account the voicing alternations in roots.

Identify the UR of all prefixes and note the contexts in which the feature $[\pm\text{voice}]$ changes.

Prefix 1			Voicing alternations in roots	
a.	at-jexatʲ	‘to ride off’	budet	‘will become’
b.	at-livatʲ	‘to pour off’	buded doktorom	‘will become doctor’
c.	at-stupitʲ	‘to step back’		
d.	ad-brositʲ	‘to throw aside’	sok-a	‘juice-GEN.SG’
Prefix 2			sok-to	‘juice-TOPIC’
e.	s-jexatʲ	‘to ride down’	sog-ze	‘juice-EMPHATIC’
f.	s-nimatʲ	‘to take down’	sok-le	‘juice-INTERROGATIVE’
g.	s-prositʲ	‘to ask’		
h.	z-delatʲ	‘to do’	sad-a	‘garden-GEN.SG’
Prefix 3			sat-to	‘garden-TOPIC’
i.	pad-avljatʲ	‘to put down’	sad-ze	‘garden-EMPHATIC’
j.	pad-nesti	‘to bring (to)’	sad-le	‘garden-INTERROGATIVE’
k.	pat-pisatʲ	‘to sign’		
l.	pad-zetʲ	‘to set fire to’		
Prefix 4				
m.	iz-obrazatʲ	‘to depict’		
n.	iz-lagatʲ	‘to state; set forth’		
o.	is-klʲutʲatʲ	‘to exclude’		
p.	iz-gnatʲ	‘to drive out’		

Question 1: What are the URs of the alternating prefixes? What rule derives the alternations? Explain your choice of URs and rules.

Question 2: Starting from the rule you stated in answer to Q1, define a *Markedness*, *M*, constraint that is satisfied when assimilation applies, and which is violated if there is no assimilation. The form of the M constraint should be: “Assign a violation mark (*) to every surface X”, where X describes the structure that’s being avoided.

Question 3: Show how your constraint assigns violations (*) to the following forms. In some cases, more than one violation mark (*) is assigned.

	the constraint you defined in Q2
azta	
asda	
asta	
azda	
asna	
aztba	

Question 4: Any modification of the UR is penalized by Faithfulness (F) constraints. State the F constraint that's violated by the application of the Russian assimilation rule.

Question 5: Indicate the ranking of the F constraint in Question 4, relative to the M constraint proposed in answer to Question 2, using the tableaux below. Mark all violations by *s. Mark critical violations by an exclamation mark (!) positioned *after* the relevant *. Indicate the winning candidate by some symbol, e.g. ⚡. Choose candidates that establish the ranking you want to propose.

UR		
patpɪsatʲ		

UR		
adbrosɪtʲ		

Question 6: Consider hypothetical surface forms like: *padbɪsatʲ, *atpɪrosɪtʲ. Does your analysis identify these candidates as *worse* than the surface form? That is, do they violate higher ranked constraints than the surface form does? Or do they have more violations of the same constraint(s) than the surface form does? If not, the analysis is incomplete and needs revision.

Revision, if needed:

UR			
padbɪsatʲ			
patpɪsatʲ			

UR			
atpɪrosɪtʲ			
adbrosɪtʲ			

Question 7: The data below shows how the process applies in longer sequences of obstruents.

- UR /mtsensk-ʒe/ SR [mtsɛnzgʒɛ] 'Mtsensk, though' (Mtsensk is a place name).
- UR /bez-v-puska/ SR [bɛsfpuskə] 'without admission'
- UR /k-vz-doxam/ SR [gvzdɔxəm] 'to the sighs'

In general, any uninterrupted sequence of obstruents (= [-sonorant] sounds) has the same voicing value throughout. This is true not only in Russian, but in all languages that have a voicing assimilation process. Does the analysis you have developed predict the correct result in the new cases? Show how it applies to /TTDV/¹ and to /DDTV inputs, e.g. /bezvpuska/ → [bɛsfpuskə], or /mtsenskʒe/ → [mtsɛnzgʒɛ].

¹ T = voiceless obstruent, D = voiced obstruent

	/TTDV/			
a.	TTDV			
b.	DDDV			
c.	TDDV			
d.	TTTV			

	/DDTV/			
a.	DDTV			
b.	TTTV			
c.	DDTV			
d.	DDDV			

Question 8: Which candidates above correspond to a *non-iterative* application of the process?

Question 9: There are languages that lack voicing assimilation: underlying TD and DT surface unchanged. E.g. English *ane[kd]ote*, *a[bs]urd* in the careful speech of some. Can your constraints be ranked differently to characterize such a system? I marked the desired winners below.

/VTDV/			
☞ VTDV			
VDDV			
VTTV			

/VDTV/			
☞ VDTV			
VDDV			
VTTV			

Question 10: There are *no* languages whose voicing assimilation process operates *non-iteratively*. Your analysis should predict this fact. Explain how the analysis achieves this.

/VTDDV/			
VTDDV			
VTDDV			
VDDDV			

/VDDTV/			
VDDTV			
VDDTV			
VDDTV			

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