Assignment 4

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ling 20: Introduction to Linguistic Analysis
Due: 8:00am, 31 January, 2022

Note: When formulating constraints using IPA symbols, you can often state a restriction as a series of constraints, e.g. *[X] and *[Y], or as a single constraint, e.g. *[X/Y]. Both of these choices are fine (technically, the latter is an abbreviation of two constraints), as this step is preparatory. The final constraint ultimately needs to be stated as a single constraint using articulatory features. The same applies to rules.

1	*12 points*

Consider the following words from Zoque, a Mixe-Zoquean language of Mexico. The voiced oral stops are in complementary distribution with their voiceless oral stop counterparts, e.g. [p] and [b] are in complementary distribution.

[kenba]	'he sees'	[ndzin]	'my pine'
[ndʒehtsu]	'you cut'	[pama]	'clothing'
[miŋgetu]	'he came also'	[mbama]	'my clothing'
[tʃehtʃaxu]	'they cut it'	[ngengetu]	'I also saw it'
[andʒiu]	'goatee'	[pəndam]	'men'
[petpa]	'he sweeps'	[wixta]	'he walked'
[mjaŋdamu]	'you went'	[tʃəknaʔtʃu]	'he frightened him'

a) State a generalization about when the voiced oral stops and the voiceless oral stops appear, respectively.

b) What are the phonemes that the voiceless and voiced oral stops are allophones of? That is, what are the underlying forms? (*Hint:* There are three.)

c) State a phonotactic constraint that prohibits the underlying forms in the right environments. Write this constraint using IPA symbols.

d) Now state this constraint using articulatory features instead of IPA symbols. The constraint must be a single statement ("It is not possible to have ...") and must not involve disjunction ("X *or* Y").

e) Based on this constraint, provide a rule that changes the underlying forms in the right environments. Use IPA symbols in this rule.

f)   Now formulate this rule using features instead of IPA symbols.

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16 points

In English, there are three forms that productively realize past tense. In what follows, we will ignore irregular past tense forms like *go~went, make~made, fit~fit,* etc.

Group 1		Group 2		Group 3	
Infinitive	Past	Infinitive	Past	Infinitive	Past
[bʌz]	[bʌzd]	[be͡jk]	[be͡jkt]	[lo͡wd]	[lo͡wdɨd]
[sa͡j]	[sa͡jd]	[stʌf]	[stʌft]	[bæt]	[bætɨd]
[ɡɹæb]	[ɡɹæbd]	[ʃɪp]	[ʃɪpt]	[pʰɪt]	[pʰɪtɨd]
[kʰɑl]	[kʰɑld]	[kʰɪs]	[kʰɪst]	[sid]	[sidɨd]
[pʰlæn]	[pʰlænd]	[wɪʃ]	[wɪʃt]		
[se͡jv]	[se͡jvd]	[fɹɑθ]	[fɹɑθt]		
[lo͡wð]	[lo͡wðd]				
[vju]	[vjud]				

The situation here is similar to what we saw for expressing the plural in class. First, consider only **Group 1** and **Group 2**.

a)   State a generalization about when the past tense element is realized as [d] and when it is realized as [t].

b) The distribution of [d] and [t] is conditioned by a phonotactic constraint on English codas that we already saw in class. State this constraint.

c) Given the constraint you stated in b., what is the underlying form of the past tense element? What is the rule that changes how the past tense element is realized when the phonotactic constraint is violated?

Now consider **Group 3**.

d) It is a general fact about English that the sequences [tt], [td], [dt] and [dd] are all impossible within a coda. State a set of articulatory features that picks out [d] and [t] but no other sound.

e) Using these articulatory features, state a single phonotactic constraint that excludes the four combinations [tt], [td], [dt], and [dd] within a coda.

f) Recall from c. above what the underlying form of the past tense element is. Given the constraint in d., state a rule that changes the underlying form to [ɨd] when the phonotactic constraint you gave in e. is violated.

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3

7 points
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The following data are from Xhosa, a Bantu language spoken in Africa. The first column gives the underlying forms of the words, and the second column shows how the words are actually pronounced.

/kuihashe/	[kwihashe]	'horse'
/kuubuso/	[kubuso]	'face'
/kuabantu/	[kubantu]	'people'
/kuamadoda/	[kumadoda]	'men'

There are two rules of Xhosa that play a role here:

(1) a. **Rule 1:**
   Change /u/ to [w] if it precedes [i].

b. **Rule 2:**
   Delete a vowel if it follows another vowel.

The two rules are illustrated below:

(2) a. *Example of Rule 1:*
   /kuihashe/ → [kwihashe] 'horse'

b. *Example of Rule 2:*
   /kuamadoda/ → [kumadoda] 'men'

a) Based on the underlying form / kuihashe /, what is the result that is produced if Rule 1 applies before Rule 2?

Underlying form:	/kuihashe/
Rule 1:	
Rule 2:	
Output:	

b) What happens if the two rules apply in the opposite order?

Underlying form:	/kuihashe/
Rule 2:	
Rule 1:	
Output:	

c) Which ordering produces the right result? What is the relationship between the rules (no interaction, feeding or bleeding)? Briefly explain why in 1–2 sentences.