Homework #2: Phonology Problems

Your answers should be typed or written very neatly. (This is a graded assignment worth **10 points**). **Due on Thursday.**

1. Korean (3 points)

In the following Korean words, you will find the phones (or sounds) [s] and [ʃ].

Determine whether these sounds are allophones of the same phoneme or allophones of separate phonemes. If the sounds are allophones of separate phonemes, give your evidence. If the sounds are allophones of the same phoneme, write a rule showing which sound is basic and which one is derived and what environment conditions the derived allophone. (i.e., what environment the derived allophone occurs in)

Note: [ç] ≈ [tʃ]

[ʃi] ‘poem’	[sal] ‘flesh’
[miʃin] ‘superstition’	[çasal] ‘suicide’
[ʃinmun] ‘newspaper’	[kasu] ‘singer’
[t^{h}aksaŋʃige] ‘table clock’	[sanmun] ‘prose’
[ʃilsu] ‘mistake’	[kasəl] ‘hypothesis’
[oʃip] ‘fifty’	[çəŋsonjən] ‘adolescents’
[çaʃin] ‘self’	[miso] ‘smile’
[pa˜ʃik] ‘method’	[susek] ‘search’
[kanʃik] ‘snack’	[tapsa] ‘exploration’
[kaʃi] ‘thorn’	[so] ‘cow’

To get full credit for these problems, you need to show every step of your work. If there are no minimal pairs, give a chart with all of the environments that each sound occurs in. Make generalizations about these environments and state whether there is complementary distribution. State which sound represents the basic phoneme. THEN, write a rule as described above.

Note: be sure to record the environments for every instance of the sounds. In some cases two of the sounds (either one of each or two of the same sound) occur in the same word. Make sure to include both in your chart.

(more problems ->)

2. English vowel nasalization (2.5 points)
In English, some vowels are pronounced with nasalization (the velum lowers to let air flow through the nasal cavity), whereas other vowels are oral. Nasalization is indicated by putting a "˜" above the vowel. E.g., [ɑ̃] is a nasalized [ɑ]. Examine the distribution of oral and nasal vowels in the data below.

bean [bĩn]	bead [bid]	sick [sɪk]
bin [bɪn]	bid [bɪd]	leak [lik]
roam [rõũm]	robe [roʊb]	
boom [bũm]	be [bi]	
bomb [bɑ̃m]	lay [leɪ]	
lame [lẽɪm]	lace [leɪs]	
bang [bæ̃ŋ]	bad [bæd]	

a. Is nasalization a constrastive (distinctive) feature of vowels in English? That is, are nasalized [ĩ] and oral [i] allophones of the same phoneme or are they allophones of separate phonemes?

b. If nasal and oral vowel pairs are allophones of separate phonemes, give evidence for this. If they are allophones of the same phoneme, give a rule that derives the allophones from the underlying phoneme. (Make the rule as general as possible, referring to natural classes of speech sounds.)

3. Akan (Ghana) (2.5 points)
As in English, vowels in the Ghanaian language Akan can be either oral or nasal. Examine the following data to determine the distribution of these sounds in Akan.

[ka] "bite"	[kā] "speak"
[fi] "come from"	[fĩ] "dirty"
[tu] "pull"	[tũ] "den"
[nsa] "hand"	[nsã] "liquor"
[tʃi] "hate"	[tʃĩ] "squeeze"
[pam] "sew"	[pãm] "confederate"

a. Is nasalization a contrastive (distinctive) feature of vowels in Akan? That is, are nasalized [ĩ] and oral [i] allophones of the same phoneme or are they allophones of separate phonemes?

b. If nasal and oral vowel pairs are allophones of separate phonemes, give evidence for this. If they are allophones of the same phoneme, give a rule that derives the allophones from the underlying phoneme. (Make the rule as general as possible, referring to natural classes of speech sounds.)
(More on next page)

4. **Rules: mental or physical? (2 points)**
When looking at phonological rules in languages, a question arises as to whether the rules are mentally represented, or whether the "rule" is a just an inevitable result of the physical properties of the human vocal apparatus.

Compare the data and the results from the English and Akan problems above. How can you use this data to argue that nasalization of vowels is not a purely articulatory process? (That is, argue that vowel nasalization is not an automatic reflex of the vocal tract due to the difficulty in shifting from one sound to another. Looking just at English alone might make one think that vowel nasalization is a reflex of the vocal tract. How does the data from Akan show that this is not so?)

Note: you need to have solved questions (2) and (3) correctly in order to answer this question correctly. If you have any doubts whatsoever about any of these problems, make sure to check in with me to get help!!