Homework assignment #2: Natural classes and phoneme analysis
Due Thursday, January 26

(1) Some hiragana symbols have a diacritic called dakuten, which looks like a double quotation
mark (゛). (If you don't read Japanese, use the online kana charts to help you answer this question.)
(a) Give a transliteration (romanized spelling) for the consonant represented in each of the
following hiragana symbols with dakuten: ど ぎ ぜ
(b) Now give a transliteration for the consonant represented in each of the corresponding
basic hiragana symbols (with no dakuten): と き せ
(c) The transliterations you just gave happen to be appropriate phonetic transcriptions as well
(for these particular hiragana symbols). Given this, what difference in sound properties
is represented by the addition of the dakuten mark to the symbols in (b)?
(d) The following hiragana symbols never take dakuten: ま ね り わ. These are also
symbols whose transliterations are a good match for their pronunciations. Use phonetic
properties to explain what the consonants represented by these symbols have in
common, and why these symbols do not appear with dakuten.
(e) Here is another hiragana symbol that does take dakuten: ぼ. The corresponding basic
hiragana symbol is ほ. Again assuming that the transliterations are good indications of
the phonetic transcriptions for these symbols, explain what is unexpected about the
relationship between this particular pair of symbols.

(2) Some speakers of Japanese, especially older speakers in particular districts of Tokyo, have
the following distribution of the sounds [ŋ] and [ɡ]. (Data from Vance 2008 and JDIC.)
[ aɪsɯaŋe ] ‘thick fried tofu’  [ naŋai ]  ‘long’
[ soŋɯ ] ‘encounter’  [ tamaneŋi ]  ‘onion’
[ kaŋi ] ‘key’  [ koŋjoː ]  ‘industry’
[ jɯɾikaŋo ] ‘cradle’  [ çiŋe ]  ‘beard’
[ ɡuŋu ] ‘pufferfish’  [ ɡiri ]  ‘obligation’
[ ɡak:o ] ‘school’  [ ɡeta ]  ‘wooden clogs’
[ ɡohan ] ‘cooked rice’  [ ɡuːzen ]  ‘coincidence’
(a) Are [ŋ] and [ɡ] in complementary or contrastive distribution in this data set?
(b) Provide evidence for your claim in (a) by describing the environments in which the
sounds occur. Be systematic — make use of sound properties and natural classes.
(c) How many distinct phonemes are represented by [ŋ] and [ɡ] here? If you think there are
two phonemes, explain why. If you think there is one phoneme with multiple
allophones, choose a “name” for the phoneme and state a phonological rule that will
produce the other allophone in the other context.

(continues on next page)
For this question, use the data in the handout “Alveolar/alveopalatal obstruents, part (I),” available from the daily syllabus page on the course web site.

(a) Consider the distribution of [ɕ] versus [s] in data set (2). You should find that the distribution is complementary.

- Choose a “name” for the phoneme that has allophones [ɕ] and [s], and state a phonological rule to generate the other allophone in the appropriate environment.

(b) Now consider the distribution of [t], [tɕ], and [ts] in data set (3). Again, you should find that the distribution is complementary.

- Again, choose a “name” for the phoneme that has allophones [t], [tɕ], and [ts], and state rules to generate the other allophones in the appropriate environments.

- If you have taken LING 200 or 523 (Phonology), go on to part (c).

- If you have never taken a phonology course, you may stop here. Part (c) of this question is not required for you. You are welcome to try it if you like; if you do, I will give you feedback on it, but I won't count it as part of your grade for this assignment.

  ** Be sure to state on your assignment which of these two groups you are in. **

(c) Consider the rules you have written in parts (a) and (b). Do you see any commonalities between the [ɕ]~[s] rule and any of the [t]~[tɕ]~[ts] rules that would allow you to state a more general, inclusive rule? If so, attempt this, and discuss any difficulties or questions that arise. If not, explain why not.

  ** Hint: It may help if you look for alternative ways of conceptualizing the [t]~[tɕ]~[ts] case, using natural classes as much as possible. The most concise analysis still requires two rules, but what are the best or most insightful two rules?**