# Prof. Marcus Kracht: Ling 20. Fall 2007.

Assignment B [Week 2] (Do exercises for a total of 20 points only. If you do more, clearly indicate which exercises are to be counted.)

[B1.] (10 Points) Assume the following classification system for consonantal phonemes of English. It uses the following attributes and values: PLACE with values: *bilabial*, *dental*, *labiodental*, *alv(eolar)*, *p(alato)alv(eolar)*, *velar* and *glottal*; MANNER with values *stop*, *fric(ative)*, *nas(al)*, and *c(entral) approx(imant)* and *l(ateral) approx(imant)*, and VOICE with values + and −. (See Table 9.)

[a] Give 5 natural classes. Show the AVS and the set of phonemes it describes.

[b] Give at least two examples of classes that are not natural. (Indicate why you think that they are not natural.)

[c] The German stops are the same as the English ones. Assume that they are classified in the same way. Consider now the following data: at the end of a syllable in German, the following combinations of nasal and voiceless stop are legitimate (I give examples for your interest only): [ŋt] (`singt`), [mt] (`Samt`), [nt] (`rennt`), [mp] (`Klumpfuß`), [ŋk] (`Fink`). Illegitimate are: [ŋp], [np], [nk], [mk]. This is standardly analysed as follows. The final stop forces the nasal to assimilate with respect to place (but dentals do not). Try to formulate a single rule that performs the assimilation. Do you see any problems in doing so? What solution can you offer instead?

[d] Look at the phonotactic restrictions for combinations of nasal and final stop in English. Which ones exist and which ones do not?

[B2.] (10 Points) In English, [k] and [k̟] (plain velar and fronted velar stops, respectively) are allophones of the same phoneme. (Thus, in our definition, /k̟/$_{\text{English}}$ = /k/$_{\text{English}}$.) Consider the following data:

(1)

| | | | | | |
|---|---|---|---|---|---|
| `kitten` | [ˈk̟ɪtn] | `cop` | [kap] | `crack` | [kɹæk] |
| `keen` | [k̟in] | `cool` | [kul] | `clock` | [klak] |
| `cake` | [k̟ek] | `cope` | [kop] | `quick` | [kwik] |
| `cat` | [k̟æt] | `cook` | [kʊk] | `extract` | [ɛkˈstɹækt] |
| `lucky` | [ˈlʌk̟i] | `cup` | [kʌp] | `Exxon` | [ˈɛksan] |

[a] What is the environment in which [k̟] is found?

[b] What is the environment in which [k] is found?

[c] Decide on the basis of your answer to the previous question which of the sounds is less marked. Write rules of realization for the phoneme.

[d] Look at the following data and write an improved version of your rule using features. [g] is a fronted voiced velar stop. You may use [+fronted] to distinguish [k̟] from [k] and [g̟] from [g].

| | | | | | |
|---|---|---|---|---|---|
| gill | [g̟ɪl] | got | [gat] | grog | [gɹag] |
| geese | [g̟is] | goose | [gus] | glimmer | [ˈglɪmɚ] |
| game | [g̟em] | go | [go] | Gwendolyne | [ˈgwɛndələn] |
| gag | [g̟æg] | good | [gʊd] | eggs | [ɛgz] |
| soggy | [ˈsag̟i] | Gus | [gʌs] | Muggsy | [ˈmʌgzi] |

[B3.] (5 Points) Define a feature HEIGHT with five values: upper high, lower high, upper mid, lower mid, low. What natural classes of English front vowels do you find? Now define instead binary features, ±high, ±low, ±upper. Here is how they correspond:

(2)

| | high | low | upper |
|---|---|---|---|
| upper high | + | − | + |
| lower high | + | − | − |
| upper mid | + | + | + |
| lower mid | + | + | − |
| low | − | + | − |

What natural classes of front vowels do you now get? What would change if we defined low instead as −high, +low, +upper?

[B4.] (5 Points) Why is vowel length not considered distinctive in English? How about consonant length?