Linguistics 251 B. Hayes
Metrics Winter 2008

Exercise #3: Evaluating Metrical Constraints with Maxent

Due in class Thurs. 2/26/08

1. Software and files

- You can download the maxent software from
  - http://www.linguistics.ucla.edu/people/hayes/Phonotactics/

  It runs in Windows or Mac, or so I hope.

- You can download the files you need from the course web site:
  - http://www.linguistics.ucla.edu/people/hayes/251metrics/

  The latter is a zipped file which you can put in any folder you like.

2. Computer trouble?

- Try doing the homework on the computer xxx, in the department computer facility, room xxx Campbell Hall, where I know it works.
- If you do the exercise on this computer, please erase your output files so you don't impede the learning experience of the next user.

3. Baseline grammar

- Let us assume the following grammar as a "baseline", attempting to make improvements on it.

Constraint	*Weight*	*Viols in real forms*	*Comment*
*[+Rise][+word_boundary]	5.103	0	logic of feature definitions
*[+Fall][+word_boundary]	6.080	0	logic of feature definitions
*[+Rise][-Accent]	6.221	0	logic of feature definitions
*[+Accent,-Fall][-Accent]	6.718	0	logic of feature definitions
*[-Accent,-Rise][+Accent]	6.962	0	logic of feature definitions
*[+word_boundary][+Strong]	3.977	0	defines meter
*[+Strong][+Strong]	5.459	0	defines meter
*[-Strong][+word_boundary]	4.108	0	defines meter
*[-Strong][-Strong]	5.280	0	defines meter
*[+Strong,+Rise]	1.479	187	Jespersenian stress matching
*[-Strong,+Fall]	2.427	202	Jespersenian stress matching

*[+Strong,+Rise,+J1]	1.625	3	*lexical rising
*[-J5][-Strong,+Accent,+J1]	1.530	8	*lexical falling not after break
*[+Strong,-Accent,+Rise,-J5][+J5]	1.613	0	phrase-final severe
*[+Strong,+Rise,-J5][+J5]	2.291	4	phrase final mitigated
*[+J1][+word_boundary]	4.695	0	no run-on lines

The performance level of this grammar is:

0.86	average real line
7.9	average CG scramble
8.25	average word scramble
8.08	average junk line
7.21	difference

4. Verify

- Verify the above performance by running the maxent software, selecting BaselineGrammar.txt in the lower left box of the program's interface.
- To get quick and easy statistics on the output of the program, use the Excel spreadsheet I've prepared:
    - go into the folder called "output"
    - open the file **blickTestResults.txt**
    - select all text, open the file **AnalysisTemplate.xls**
    - select the worksheet **Main** (tab at bottom of screen)
    - click on cell **A8**
    - paste
- You'll see the stats in blue at the top of the page, and data about the constraints on the tabbed worksheet called **GrammarAnalysis**. These can be pasted into your write-up.

5. Three candidate improvements

*[+word_boundary][+J5] (tier=default)
Don't interrupt first foot with a big break.
*[-Accent][+word_boundary] (tier=default)
Fill the 10th position with stress.
*[-Strong,+J5] (tier=default)
Don't put a feminine ending before a line-medial break.

- These are in the files called **Grammar1.txt**, **Grammar2.txt**, and **Grammar3.txt**. Run them all, paste them into your writeup document, and comment on whether they create improvements.

6. Your own constraint

- Make up a constraint of your own devising. Its format must be the following (the software is quite unforgiving of errors here):

  - asterisk
  - sequence of bracketed feature sequences. Legal bundles of features may be found in the file NatClassesFile.txt, which is in the temp folder.
  - a tab
  - the expression "(tier=default)"

- Append this constraint to the end of the file BaselineGrammar.txt, being sure to include a line ending at the end (hit Return to ensure this).
- Explain the purport of your constraint, evaluate it with the software, and report your results.

7. Technical troubles

These arise easily! Feel free to consult me; bhayes@humnet.ucla.edu.