Frequency and English phonology
Linguistics 696b (Spring 2005)

A. Overview

(1) Organization:
   a. Syncope;
   b. Vowel reduction;
   c. Rhythm;
   d. Other reductions;
   e. Judgments;
   f. The generalizations;
   g. How to treat this?

B. Syncope

(2) Stressless vowels are elided word-medially under specific stress conditions and when adjacent consonants rise in sonority (Hammond 1997).

(3) Hooper (1976) shows that vowel elision is a function of frequency with high-frequency items like \textit{m`em}ory undergoing elision to \textit{m`em(o)ry} more readily than lower-frequency items like \textit{m`am}ory, e.g. \textit{nursery} vs. \textit{cursory}, \textit{scenery} vs. \textit{chicanery}, \textit{celery} vs. \textit{artillery}.

C. Vowel reduction

(4) Vowels in word-initial pre-stress position can be stressed or reduced (Hammond 1988).

(5) Fidelholtz (1975) shows that word-initial vowel reduction in closed syllables is a function of frequency, with relatively high-frequency items like \textit{astr`onomy} undergoing initial reduction more readily than lower-frequency items like \textit{g`astr`onomy}.

D. Rhythm

(6) Phrasal stress shifts to the left when stress are two close (Liberman & Prince 1977; Hayes 1984; Hammond 1988).

(7) Phrasal rhythm is affected by the frequency of the modifier. Hammond (1999) shows that high-frequency modifiers undergo rhythm more readily than low-frequency modifiers. Thus a phrase like \textit{n`a´ıve fr´ıend} with a higher-frequency modifier like \textit{n`a´ıve} undergoes rhythm more readily than a phrase like \textit{`ob´ese ch´ıld}, with a lower-frequency modifier like \textit{`ob´ese}.

(8) Hicks et al. (2000) show that the same effect applies to phrasal rhythm, such that rhythm is more likely in higher-frequency phrases than in lower-frequency phrases. Thus, rhythm is more likely in \textit{`unfit móther}, than in \textit{`unfit fáther}. This is also apparent from the classical literature on rhythm, where fixed phrases like \textit{bámbóo cártain} undergo rhythm more readily than phrases like \textit{bámbóo fénce}.

E. Other reductions

(9) Jurafsky et al. (2001); Jurafsky et al. (1998) show that function words undergo more reduction as a consequence of their frequency and the frequency of the phrase they appear in.
Hammond (2003a) shows that medial reduction in words like condénsátion is a function of both the frequency of the word and the frequency of its cyclic base, e.g., in this case condénsé.

F. Judgments

Coleman & Pierrehumbert (1997) show that experimental judgments of wellformedness correlate with the frequency of the parts of a form.

The latter can be measured in a variety of ways:

- segment frequency
- bigram frequency
- frequency of prosodic constituents
- lexical neighborhood

SPAM: we’ve shown that wellformedness correlates inversely with onset markedness (Brewer et al. 2004b; Brewer et al. 2004c; Brewer et al. 2004a).

SPAM: we’ve shown that wellformedness correlates positively with overall segmental markedness.

G. The generalizations

What frequency effects are observed?

- frequent items “reduce” more readily;
- rhythm is an instance of reduction;
- frequent collocations trigger reduction;
- frequent bases trigger reduction;
- words composed of more frequent bits are “more wellformed”;
- words that are similar to lots of words are “more wellformed”;
- words that are less marked are “more wellformed”;
- onset complexity doesn’t fit.

H. How to treat this?

We need gradient wellformedness: some version of stochastic OT (Boersma 1997; Boersma & Hayes 2001; Hammond 2003b).

We need the frequency of substrings to affect overall wellformedness.

We need markedness to affect overall wellformedness.

References


Hicks, Cathy, Robert Kennedy, & Michael Hammond, (2000). Lexical frequency and the rhythm rule in English. annual meeting of the LSA.


