**A new analysis of Danish stød using lexical phonology**

Whereas most forms of mainland Scandinavian use pitch accent, where every word has one of two tonal patterns, Danish uses a feature called stød, which is phonetically a kind of glottalization of either a vowel or a sonorant, sometimes produced as creaky voice, sometimes as a glottal stop (generally, creaky voice when it occurs on a vowel, glottal stop when on a sonorant consonant). Minimal pairs include *lov* [low] 'law' and *Lov'* [low?] (a placename). There is debate over whether the stød is a special laryngeal feature independent of intonation, or whether it is simply the realization of a HL boundary intonational pattern (which is found on every word). It only occurs on stressed syllables (which in Danish must be either the final or the penultimate syllable), where the vowel is long or where the short vowel is followed by a sonorant. This suggests a moraic analysis, where only [+son] segments can project a mora, and stød, whatever it is underlyingly, is 'attached' to the second mora. But in order to account for words like *lov* 'law', final consonant extrametricality must hold, and *Lov* must be accounted for by lexical exceptions to extrametricality. If we consider stød to arise from a boundary tonal contour, we say L must attach to the final mora, and H to the previous mora, which comes out as stød if on the same syllable (see example 1).

Studies of stød, such as there are, generally focus on either its phonetic output or its relation to Danish intonational patterns. The difficulties in analyzing stød with relation to morphology have been most exhaustively discussed in Basbøll (2005), drawing mainly on his earlier work and that of Nina Grønnum (Basbøll & Grønnum 2001), but the analysis, based on three categories of morphological productivity, seems overly complicated, and instead I suggest a much simpler analysis based on lexical phonology, which will allow us to limit ourselves to at most two lexical levels. I believe that the analysis also lends itself to the theory that stød is the realization of a HL tonal pattern on stressed monosyllables at a certain lexical level, but, in agreement with Basbøll, it cannot be characterized as a purely post-lexical realization of the tonal pattern.

The issue revolves crucially around certain words which have homophonous morphology but different values for stød. Thus, *læ:ser* 'reader' without stød, but *læ'ser* '(s/he) reads', with stød. For verbs such as 'read', there is a root *læs*, which appears as such in the imperative (with stød on the vowel, which is underlyingly long); the infinitive is formed with the suffix /e/, so *læse*, without stød, because the last syllable has only one mora. The word for 'reads' is formed by adding the level 2 present tense suffix /er/ to the root /læ:s/; the root has a long vowel, and so when HL was assigned after level 1, it was realized as stød. After adding /r/ at level 2, it surfaces as *læ'ser*. With 'reader', the level 1 infinitival suffix /e/ is added before assignment of HL, so the tonal pattern surfaces as such on the resulting disyllable (in Standard Copenhagen Danish, HL is realized with the H tone displaced to the right, but underlyingly it attaches to the first, i.e. stressed syllable). At level 2, the nominal agentive suffix /r/ is added, but does not change the tonal pattern which was formed before level 2 (see example 2).

I will focus on cases like these, and also similar cases in nouns; thus the definite form 'the law' is *lov'en*, which is /low + en/. The addition of the presumably level 1 suffix /en/ prevents extrametricality from excluding the /w/ from moraic parsing. With or without the suffix, extrametricality clearly applies before assignment of HL.

The analysis might even be further simplified by considering suffixes like /er/ and /en/ to be in fact /r/ and /n/, with epenthesis operating after HL is attached. This would obviate the need even for two lexical levels.

The primary theoretical interest of this problem is the link between intonational patterns and stød, which is rare cross-linguistically. The idea that stød represents such patterns is not itself new, but the various objections to it, which have been raised by e.g. Basbøll, can be satisfied, and the apparently complicated morphological and lexical 'exceptions' can be considerably simplified using my analysis.
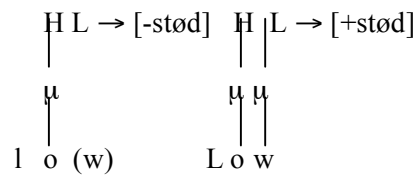
**Bibliography**

Basbøll, Hans. 2005. *The Phonology of Danish*. Oxford.

Grønnum, Nina and Hans Basbøll. 2001. Consonant length, stød and morae in Standard Danish. *Phonetica* **58**, 230-253.

**Examples**

1)

H L → [-stød]   H ᵢL → [+stød]
|                |ᵢ|
μ                μ μ
|                ᵢ|
l o (w)      L o w

2)

H ᵢL → [+stød]        H          L
|ᵢ|                   |          |
μᵢμ                   μ    μ     μ
ᵢ|                    |    |     |
l æ æs + er 'reads'   l æ  æs  e + r 'reader'