

## SYLLABLE STRUCTURE AS A FACTOR IN SOME DANISH SOUND CHANGES

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### Introduction

Basbøll (1973) has argued that the syllable - considered at a rather low level of abstraction - must be recognized as an important unit in phonology. Basbøll has shown, among other things, that the classification of Danish consonants according to their distributional behaviour - in particular along the lines suggested by Sigurd (1965) - may be meaningfully and fruitfully compared with their phonetic classification in terms of distinctive features.

It is tempting now to apply Basbøll's insight to the dynamics of phonology, in order to see whether the hierarchic description of syllable structure will in any way contribute to our understanding of sound change.

I have attempted to relate some of the recent sound changes in Standard Danish - so well documented by Brink and Lund (1975) - to syllable structure conditions expressed in terms of "order classes" and the corresponding distinctive feature hierarchy.

### Sound changes in 19. century Standard Danish

A close inspection of the findings of Brink and Lund (1975) allows us to reconstruct with reasonable confidence the sound system of Copenhagen Standard Danish (henceforth CSD) of the late eighteenth century, and also to consider the structure of syllables in terms of a distinctive feature hierarchy à la Basbøll. Fig. 1 shows the structure of peak + coda of CSD syllables shortly before 1800. The order classes are numbered (arbitrarily) from 1 to 5. The hierarchy deviates from that of Basbøll in two respects: 1) the feature framework is that of Jakobson, Fant and Halle (1952), cf. the existence of the feature "vocalic". I do not intend to argue here for or against certain features or

Order class:	5	4	3	2	1
	v	:	l	m	s
		i	ð	n	f
		u	ʁ	ŋ	b
		ɛ		v	d
				ɣ	g
kål 'cabbage'	ɔ	:'	l		
rød 'red'	ø	:'	ð		
hær 'army'	ɛ	:'	ʁ		
negl 'nail'	a	ɛi'	l		
tid 'time'	i	:'	ð		
arbejd! 'work!'	a	ɛi'	ð		
sejr 'victory'	a	ɛi'	ʁ		
skovl 'shovel'	ɔ	ɔu'	l		
ud 'out'	u	:'	ð		
sur 'sour'	u	:'	ʁ		
hagl 'hail'	a	ɛi'	l		
lån 'loan'	ɔ	:'		n	
bog 'book'	ɔ	:'		ɣ	
støv 'dust'	ø	:'		v	
hegn 'fence'	a	ɛi'		n	
sagn 'tale'	a	ɛi'		n	
havn 'harbour'	a	ɔu'		n	
rødm! 'blush!'	ø		ð'	m	
elm 'elm'	ɛ		l'	m	
+syllabic					
-consonantal					
+vocalic					
+sonorant					

Fig. 1. Segments and order classes before 1800.

feature definitions, but the substitution in generative phonology of the feature "vocalic" by the feature "syllabic" seems to me misguided: the feature "vocalic" is in my opinion a useful inherent feature. 2) vowel length is interpreted analytically, i.e. the symbol ":" is an abbreviation for a series of -consonantal, +vocalic segments ( $\underset{ː}{q}$ ,  $\underset{ː}{g}$ ,  $\underset{ː}{j}$ , etc.; e.g. a word like vane 'habit' is interpreted as /və $\underset{ː}{n}$ e/). This is not to deny that vowel length may in certain respects function as a prosodic or even as an inherent feature; I simply assume that length and gemination are equivalent in the sense that long vowels behave as single segments in certain respects and as a sequence of two segments (which happen to be identical as far as their inherent feature composition is concerned) in other respects, e.g. in their function in the syllable. I follow Basbøll (1973), however, in considering  $\gamma$  a dorsal fricative occurring after long vowels and (before 1800 probably only in over-distinct spelling pronunciations) after l and r; I thus take  $\gamma$  and  $\underset{ː}{j}$  (the latter occurring after short vowels only) to be (phonetically) distinct, although this distinction is not (explicitly) recognized by Brink and Lund, who use the symbol  $\gamma$  for both sounds.

If we assume that the order classes and feature hierarchy of fig. 1 correctly depicts the structure of possible codas shortly before 1800, the following language specific coda structure conditions may be set up:

- 1) the coda may never contain more than two sonorant segments.
- 2) if a coda contains two sonorant segments, then these segments must not belong to the same order class; more specifically: the rightmost segment must belong to a lower order class than the leftmost segment, i.e. sonority must fall during the sonorant part of the rhyme of the syllable.

Now, Brink and Lund report that vocalized pronunciations of postvocalic / $\underset{ː}{u}$ /, / $\underset{ː}{y}$ / and / $\underset{ː}{v}$ / turn up - and eventually are generalized - in the speech of people born in the first half of the 19. century. These vocalized pronunciations - i.e.  $\underset{ː}{y}$  instead of  $\underset{ː}{u}$ ,  $\underset{ː}{j}$  or  $\underset{ː}{y}$  instead of  $\underset{ː}{y}$ , and  $\underset{ː}{y}$  instead of  $\underset{ː}{v}$  - occur roughly in the following

contexts: 1) before consonants, 2) before shwa, and 3) word finally. In the following the term "weak position" will be used as a common denominator for such contexts. These changes may be stated informally thus:

1)  $\text{ɸ} \rightarrow \text{p}$  in weak position

e.g.  $\text{gɔ:}'\text{ɸ} \rightarrow \text{gɔ:}'\text{p}$  'farm'

2a)  $\gamma \rightarrow \underset{\cdot}{\text{i}}$  in weak position after front vowels and l

e.g.  $\text{sø:}'\gamma \rightarrow \text{sø:}'\underset{\cdot}{\text{i}}$  'search!'

2b)  $\gamma \rightarrow \underset{\cdot}{\text{u}}$  in weak position after back vowels

e.g.  $\text{bɔ:}'\gamma \rightarrow \text{bɔ:}'\underset{\cdot}{\text{u}}$  'book'

3)  $\text{v} \rightarrow \underset{\cdot}{\text{u}}$  in weak position

e.g.  $\text{gʁɑ:}'\text{v} \rightarrow \text{gʁɑ:}'\underset{\cdot}{\text{u}}$  'grave'

These changes were not simultaneous: according to Brink and Lund, 1) must have started around 1800, 2a) and 2b) started shortly before 1840, i.e. the first occurrences of  $\underset{\cdot}{\text{i}}$  and  $\underset{\cdot}{\text{u}}$  instead of  $\gamma$  are found in the speech of people who were born between 1830 and 1840. 3) started around 1850, i.e. the first occurrences of  $\underset{\cdot}{\text{u}}$  instead of  $\text{v}$  are found in the speech of people who were born around 1850.

There is reason to believe, furthermore, that the segment  $\text{ð}$  had been reinterpreted as -consonantal, too (Brink and Lund mention that this segment was often pronounced as a fricative by their oldest informants; today  $\text{ð}$  is never pronounced with friction and is classified as -consonantal (as a vocoid) by Basbøll (1975). It is reasonable to hypothesize that around 1860  $\text{ð}$  was classified together with  $\text{p}$ ,  $\underset{\cdot}{\text{i}}$ ,  $\underset{\cdot}{\text{u}}$ ,  $\underset{\cdot}{\text{i}}$ , and  $\text{:}$  ( $\text{V}$ ) as -consonantal, +vocalic.

Thus, around 1860 the vocalized pronunciations of postvocalic  $\text{/ɸ/}$ ,  $\text{/γ/}$ ,  $\text{/v/}$ , and  $\text{/ð/}$  was already common, at least after long vowels (=  $\text{V}\underset{\cdot}{\text{V}}$ , cf. above), and this meant that many words in which a long vowel was followed by one of these vocalized segments had come into conflict with the syllable structure conditions mentioned above: If words like  $\text{gård}$ ,  $\text{ud}$ ,  $\text{bog}$ ,  $\text{søg!}$ ,  $\text{grav}$  were frequently and fashionably

pronounced  $g\alpha: 'p$ ,  $u: 'ð$ ,  $b\alpha: 'u$ ,  $s\alpha: 'j$ ,  $g\alpha: 'u$  around 1860, at least by young people, i.e. by people born later than, say, 1840, then these words contained syllable codas with sequences of sonorant segments of equal sonority, i.e. belonging to the same order class, viz. the one defined by the features -consonantal, +vocalic (order class 4 in fig. 1). It is very interesting to note, therefore, that Brink and Lund report a new change to have started around 1860, viz. a general shortening of long vowels before the segments  $p$ ,  $j$ ,  $u$ , and  $\delta$ , i.e. exactly the segments before which long vowels are in conflict with the hypothesized coda structure conditions (presupposing, still, that long vowels function as  $V\bar{V}$  in the syllable).

This vowel shortening is far from completed today, but in the speech of younger Copenhageners (especially of the higher social classes) pronunciations with long vowels in monosyllabic words like the ones mentioned above are definitely obsolete or even impossible.

#### Interpretation of vowel shortening

If this vowel shortening is seen as a sort of therapy the function of which is to reestablish the syllable structure conditions mentioned above, then we can visualize the new state of affairs (still not completely reached) as in fig. 2:

order class:	5	4	3	2	1
	V	:	l	m	s
		j		n	f
		u		n	b
		p		v	d
		ð			g

Fig. 2. Segments and order classes after the changes.

A comparison of figs. 1 and 2 will reveal that the order classes - as defined by distinctive feature

configurations - are the same as before, but the inventories of segments in order classes 4 and 3 have been changed, order class 3 having been reduced to containing only the segment l, and order class 4 having been enriched by the segments ɸ and ð. In the speech of young people the segment j (occurring only after certain short open vowels) has also disappeared, having developed into i or u in a way parallel to γ.

Words like bjerg 'mountain' and tørv 'turf' are of particular interest in this connection: it is uncertain whether these words were pronounced as true monosyllables before 1800, cf. old pronunciations like bjæʁ'(ə) and tæʁ'(ə) attested by Brink and Lund and by old spellings. Today they are often pronounced with a short (r-coloured) vowel, i.e. bjæɣ', tæɣ', respectively, at least by young people. It seems natural to relate vowel shortening before -consonantal segments to the deletion of a -consonantal, +vocalic segment in the same position.

Needless to say, the proposed explanation of the above-mentioned changes is, at best, a de-post-facto explanation, but this is what most "explanations" of sound change are.

### References

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