Danish stød
towards simpler structural principles?
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Published in:
Understanding Prosody – The Role of Context, Function, and Communication

DOI:
10.1515/9783110301465.27

Publication date:
2012

Document version:
Final published version

Citation for published version (APA):

Go to publication entry in University of Southern Denmark's Research Portal

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Danish stød –
Towards simpler structural principles?

1 Introduction

Stød is a well established phenomenon in Danish. The first scientific account of it is to be found in Jens Pedersen Høysgaard’s (1698-1773) *Concordia res parva crescent, eller Anden Prave af Dansk Orthographie* (Høysgaard 1743) and *Accentuered og Raisonnered Grammatica* (Høysgaard 1747). However, an indirect reference to stød occurred already 200 years earlier in an inflammatory speech against the Danes, held in 1510 by the Swedish bishop Hemming Gadh: *Vehemens contra Danos oratio*. The source may be historically inaccurate, but the speech is contained in Johannes Magnus’ (1488-1544) *Historia de omnibus Gothorum Sueonumque regibus*. Magnus’ opus is most likely composed before 1526 — when he left for Rome never to return — but was only published in 1554 (by Olaus Magnus). The pertinent part of Gadh’s speech reads thus (Magnus 1554, 2nd ed. 1617, p. 875):

"Nec ut ceteri homines loqui dignantur, immo more tussientium, aut verba in medio gutture formantium, ita de indust<e>ia proloquuntur, ut superius labium in sinistrum, inferiusque in dextrum latus distorquentes, ex singulari oris deformitate, singularem gloriam sese assequi posse existiment."

A Swedish translation from some time later in the century (reprinted in Söderberg 1908) reads:

"Det till medh: så werdas de icke heller att talla som annat folk, uthan tryckta ordhen fram lika som the willia hosta, och synas endeles medh flitt forvendhe ordhen i strupan, for ãn de komma fram, sammaledes wanskap the munnen, då the talla, wridhan och wrengan, så att the draga then offwa leppen till then wenstra sidon och den nedra till then högra sidon, menandes dett vara sig en besynnerlighe prydnig och wellståndh."

In approximate present-day English that would be:

Not only do they not stoop to speak like other people, but press the words out as if they will cough, and appear even deliberately to twist the words in the throat before they come out, likewise they misshape the mouth when they speak, twisting and
turning it, pulling the upper lip to the left and the lower lip to the right, deeming that to be particularly becoming and proper.

(Italics single out the passage which we take to be an indirect reference to the stød).

Stød is absent in a number of Danish dialects and regional languages, namely roughly south of a boundary drawn from Rømø in the west via Fílborg and Nyborg on Funen across the southernmost tip of Zealand to Præstø in the east, cf. Ejstrup (1990). When and where stød occurs it does not necessarily have the same distribution as in standard Copenhagen Danish. We are dealing here exclusively with the standard Copenhagen variety.

2 The phonetics of stød

Stød is a kind of creaky voice, that is non-modal voice with aperiodic vibrations and irregular amplitude. It is therefore found exclusively in voiced sounds, and it only occurs under conditions of more than zero stress. Most noteworthy, it requires a certain minimum amount of voiced material in the syllable rhyme in order to be present:

(a) either a long vowel, as in [pʰeːn] pen ‘nice’
(b) or a short vowel + a sonorant consonant, as in [pʰən] pen ‘pen.’

(Stød is conventionally marked after the long vowel symbol and after the first post-vocalic sonorant following short vowels, respectively. For lack of a more appropriate notation we use a superscript [¹].)

Syllables which fulfill these segmental and prosodic requirements are heavy in Danish phonology. That is how they were characterized in Basbøll (1988), where the notion weight unit in Hyman’s sense (1985) was employed. In later works they are called bi-moraic (see, for example, Basbøll 2005, 2008). The idea of stød as a mora-counting device can also be found in the work of some Prague phonologists (Trubeezkoy 1935: section 34, and Martinet 1937: 100-102); see also Liberman (1982). Fischer-Jørgensen’s (1987, 1989a, 1989b) phonetic description of vowels with stød as having two distinct phases, a preparatory non-stød phase succeeded by a stød phase proper, is in accordance with such a moraic analysis.

Basbøll’s (1998) mora-analysis – and Fischer-Jørgensen’s previous investigations – posed a number of questions about consonant and vowel duration and about the perception of stød. In the early 2000s we addressed some of these questions and found:

(1) Vowels with stød are as long acoustically and perceptually as long vowels without stød. Accordingly, stød vowels could be bi-moraic (Grønnum and Basbøll 2002a, 2002b).

(2) Consonants with stød are not generally longer acoustically than consonants without stød across all positions. If consonants with stød are moraic and consonants without stød are not moraic, and if morae in Danish are to have durational correlates in the consonants – as they do in typical mora-counting languages, this is an obstacle for the analysis (Grønnum and Basbøll 2001a, 2001b).

(3) Listeners generally perceive the stød onset in long vowels to coincide with vowel onset. In other words, there is no perceptual bi-partition with stød confined to the second part of long vowels (Grønnum and Basbøll 2003a, 2003b).

An unambiguously two-phased stød would imply that the creaky voice should be contained in the second half of long vowels or within the sonorant consonant after short vowels. Such a well-defined acoustic alignment may occur, as in the example in Figure 1 left, but mostly it does not, cf. the example in Figure 2. Stød may even be acoustically quite elusive, as in Figure 3 left. In other words:

(4) The exact acoustic properties, the timing, and the segmental domain of the stød are highly variable.

One interesting thing about this considerable acoustic variability is that it does not seem to affect the perception of stød: Stød is as clearly audible and identifiable in the word in Figure 3 left as in the words in Figure 1 left and Figure 2. For a more comprehensive account, see the explanations and examples in Grønnum and Basbøll (2007).
Danish stød is very reminiscent perceptually of the glottalization found in German as described by Klaus Kohler (Kohler 1994, 2001). Its function is different, of course, Danish stød being phonologically and morphologically conditioned and distinctive, cf. sections 3 and 4 below. Presumably, at least certain aspects of its production would also keep it apart: Fischer-Jørgensen (1987, 1989a, 1989b) contains an account of various phonation types, particularly creaky voice. She concludes that many features are identical in creaky voice and stød, but that stød is not simply creaky voice. We agree entirely, and we speculated about the kind of articulatory mechanism which could be made responsible for the rather astounding acoustic – if not perceptual – variability, cf. above. This is what we came up with in Grønnum and Basbøll (2007) as a characterization of the stød in articulatory terms:

2.1 Stød as a ballistic gesture
The laryngeal activity is a ballistic gesture which – minimally – makes for a slightly compressed voice quality, at one end of a continuum, and – maximally – creates a distinctly creaky voice at the other. Under emphasis it may become a complete glottal closure.

It is a property of the (sonorant part of the) syllable rhyme.

It is aligned with the onset of the rhyme.

It is variable with respect to strength and to temporal extension.

The proposed ballistic gesture is to be understood as the low-pass filtered muscular response to a transient neural command. The neural command is presumably timed to coincide with the onset of the syllable rhyme. The impulse may be stronger or weaker, resulting in more or less irregular vocal fold vibration of shorter or longer duration, but once the command is executed, the speaker can no longer control the way the vocal folds respond to the excitation, just as one can no longer control the trajectory of a tennis ball once the ball has bounced off the racket. This proposal is consistent with the fact that speakers cannot choose to increase the duration of the stød ad libitum the way one may choose to lengthen creaky voice at the end of an utterance. It is consistent as well with the way we have seen the stød to behave acoustically, cf. the more explicit (Fig. 1 left and Fig. 2) or less explicit (Fig. 3 left) non-modal vocal fold vibration; the variable timing of the onset of actual creaky voice in the waveform and the spectrogram (Fig. 2); and the variable total duration which often makes it continue well into the following syllable (Fig. 2). Furthermore, our proposal is consistent with EMG-data: the onset and offset of the higher vocalis muscle activity in stød relative to modal voice are executed as a smooth, gradual rise and fall (Fischer-Jørgensen 1987, 1989a, 1989b). It would be curious indeed if the actual mechanical change in vocal fold vibration mode were not also gradual. At present we have no indication that the variability in strength and timing is not random. However, investigations of stød in a corpus of non-scripted speech (Grønnum 2009) may reveal individual differences among speakers and variation as a function of speech rate, or – more likely – degree of prominence on the syllable.

Given the results of our investigations and our hypothesis about the underlying physiological mechanism, Basbøll’s (1988) proposal of ‘stød as a signal for the second mora of syllables’ is not an accurate nor an immediate cognitive reality. His mora analysis has undergone significant changes in recent years: extra-prosodically (that is: position outside a given prosodic frame) has become a central concept, and with it he has been able to make a number of important predictions about stød and lexical patterning (Basbøll 2003, 2005: 400-14, 2008), as evidenced below.

The function of stød

Stød is indisputably distinctive on the surface:

\[\text{\['le:s\] laser 'reads' vs. \['le:s\] laser 'reader'}\]
\[\text{\['væ:n\] brown 'the whale' vs. \['væ:n\] taken 'numb'}\]
\[\text{\['hu:s\] house 'the house' vs. \['hu:s\] housed 'housed'}\]
\[\text{\['tcem\] tanner 'timmer' vs. \['tcem\] tanner 'empires'}\]
\[\text{\['he:n\] hander 'hands' vs. \['he:n\] hander 'happens'}\]
\[\text{\['sd\] stranger 'rods' vs. \['sd\] stranger 'locks up'}\]
\[\text{\['ge\] galler 'is valid' vs. \['ge\] galler 'gails'}\]

(Note that the vowel [v] in the examples above is the manifestation of [ɔ], as in, for example, [\text{\['le:s\] laser 'reader'}]; and [a] assimilates to a neighbouring vowel or sonorant consonant as in, for example, [\text{\['he:n\] brug 'use'}], [\text{\['væ:n\] brown 'the whale'}]. Likewise [ra] and [ræ] also coalesce in [v], as in, for example [\text{\['an\] angre, angrer 'to regret'}], [\text{\['he\] regrets'}].)

Although stød distinguishes meanings, it is, as we shall see below, to a very large extent predictable from syllabic and morphological structure.

The stød/non-stød distinction roughly parallels the Accent I/Accent II distinction in standard Swedish and Norwegian. Words with stød in Danish generally correspond to words with Accent I in Swedish and Norwegian, and words without stød correspond to words with Accent II. There are some notable differences, however.

(1) The stød/non-stød distinction is a difference in creaky versus modal voice quality; the Swedish and Norwegian word accent distinction is purely tonal.

(2) There are segmental restrictions in stød occurrence, cf. section 2 above; no such restrictions apply to the word accents.

(3) Stød is associated with syllables, not words; the opposite is true of word accents. It takes at least two syllables in Swedish or Norwegian for Accent II to occur; furthermore, in composite words Accent II will stretch out and cover the whole word.

(4) Danish monosyllables may have stød or not; monosyllables in Swedish and Norwegian always carry Accent I.

(5) Swedish and Norwegian stressed syllables are always heavy, either because the vowel is long or because a short vowel is followed by a long postvocalic consonant. In Danish, the heavy versus light distinction in stressed syllables with short vowels depends on the nature of the coda consonant: only a sonorant consonant will...
make the syllable heavy, as, for instance, in [sdrum] stramt ‘tight’ vs. [laq] laks ‘salmon’.

Together these differences make any direct comparison of tonal word accent in Swedish and Norwegian with Danish stød phonetically, phonologically and morphologically opaque. In addition, to our knowledge, no trends have been reported for Swedish or Norwegian to match our observations and speculation below about the new trends for stød distribution in section 6 below.

4 Phonology and morphology of stød

Initially, we should point out that the principles governing stød are productive. This is reflected, inter alia, in the way most Danes pronounce German and Austrian composers, for example:

[mu:s] Mozart rather than [mod:art]
[hen] Händel rather than [hendl]
[bra:ms] Brahms rather than [bra:ms].

Latin and Greek words likewise obey the stød principles of the native Danish vocabulary, whereas English and French loans generally obey the principles of lexical non-stød (cf. Basbøll 2008: 155-160). We consider only the native stød principles here.

4.1 Stød and word structure

This section presents some instantiations of general principles stated in Basbøll (2003, 2005). A general, operative principle of stød is that:

(1) lexically specified properties remain constant throughout.

That is, if a lexical item is marked with stød, the stød will appear in every inflected and derived form, and it is not subject to deletion under any circumstances (except due to stress reduction as, for example, in composition or in unit stress reduction, cf. Rischel 1983). Conversely, if a lexical item is marked for non-stød, stød does not turn up in any context. Such well-established lexicalized forms are not considered any further here, because they are not the result of productive processes, and they are immaterial to our presentation of stød in unexpected contexts.

4.1.1 Stød in non-inflected, non-derived words (lexical items)

As noted earlier, stød only occurs in segmentally heavy syllables with more than zero stress.

[mu:s] mus ‘mouse’
[musa] mus ‘muse (n)’
[pian] pian ‘pian’
[tanda] tante ‘aunt’
[vam] vam ‘double’
[bamse] bamse ‘teddy-bear.’

From the examples above we would conclude that monosyllabic lexical items have stød, disyllabic lexical items do not. However, consider

[gala] galant ‘chivalrous’
[balans] balance ‘equilibrium’
[bamse] bamse ‘teddy-bear’.

The disyllable galant has stød; the tri-syllable balance is without stød; and the tri-syllable bamse has stød. The proper general principle now appears to be:

(2) the penultimate syllable of lexical items has no stød.

There are exceptions to this principle, however, in some lexical items ending in [al], [en], [ar], cf. [en] enkel ‘simple,’ [vak] våben ‘weapon,’ [il] ilær ‘short-tempered,’ but not all, cf. [en] engel ‘angel,’ [ok] åben ‘open,’ [al] alør ‘altar.’ Most of the lexicalized forms with stød derive historically from monosyllables. In accordance with (1) above, they do not undergo morphological stød-alternations.

4.1.2 Inflection and derivation

Matters are more complex in inflected and derived words due to the different behaviour of suffixes, depending on their degree of productivity (Basbøll 2003, 2005: 351-63):

(3) Suffixes are fully productive, semi-productive or non-productive.

Basbøll’s categorization of suffixes and its consequences for his account of stød behaviour entailed a considerable simplification, compared to previous descriptions, when he turned matters on their head and showed how the pertinent question no longer is which syllables have stød, but rather:
When does a heavy syllable not have stød?

The answer is bi-partite:

(4a) It depends on the productivity of the suffix.

Before semi-productive suffixes it also depends on the stem: monosyllabic versus polysyllabic.

We will look at one inflectional and one derivational suffix from each of the three productivity groups for illustration. That will suffice to give the reader an idea of the principles regulating stød in inflected and derived forms.

4.1.2.1 Productive suffixes

An example of a productive inflectional suffix is the plural morpheme \[\text{\textendash}r\], cf.

\[\text{\textendash}r\] (pl.)
\[\text{\textendash}r\] (pl.)
\[\text{\textendash}r\] (pl.)
\[\text{\textendash}r\] (pl.)

(Note that \[\text{\textendash}r\] + \[\text{\textendash}r\] contract to \[\text{\textendash}r\], thus, for instance, \[\text{\textendash}r\] + \[\text{\textendash}r\] > \[\text{\textendash}r\].) A productive derivational suffix is noun forming /\textendash/, cf.

\[\text{\textendash}\] (pl.)
\[\text{\textendash}\] (pl.)
\[\text{\textendash}\] (pl.)

A productive suffix has no effect on stød as such.

4.1.2.2 Non-productive suffixes

An example of a non-productive inflectional suffix is the noun plural morpheme \[\text{\textendash}\], cf.

\[\text{\textendash}\] (pl.)
\[\text{\textendash}\] (pl.)

A non-productive derivational suffix is the noun forming /\textendash\/, cf.

\[\text{\textendash}\] or \[\text{\textendash}\] rad `sweet' vs. \[\text{\textendash}\] sodome `sweetness'

The ensemble behaves like a lexical item and principle (2) is operative: the penultimate syllable of lexical items has no stød. This translates into yet a principle:

(6) A non-productive suffix is integrated in the stem.

The integration of stem and suffix may be conceived as the effect of a weak boundary between them. It stands to reason that a productive suffix has a more autonomous status cognitively, and is more easily separable from the stem, than a non-productive one.

4.1.2.3 Semi-productive suffixes

An example of a semi-productive inflectional suffix is infinitive \[\text{\textendash}\], cf.

\[\text{\textendash}\] (pl.)
\[\text{\textendash}\] (pl.)

A semi-productive derivational suffix is, for example, adjectival /\textendash\/, cf.
It appears that

Before semi-productive suffixes only monosyllabic stems have no stød.

But a stød appears when the stem is expanded to the left. Note that the only two semi-productive inflectional suffixes are verbal, namely infinive [a] and perfective [ta], whereas there are a dozen semi-productive derivational suffixes.

The net result of principles (2) through (7) is that phonology and morphology together, by and large, predict the presence and absence of stød. Conversely, stød and its absence will act as a cue to morphological structure. Note especially that these principles are not sensitive to word class, but exclusively to word structure (and syllabic structure) and degree of productivity of the (inflectional or derivational) suffix.

5 Psycholinguistic issues

There are some less tangible aspects of the nature of stød which should complete the picture of this fascinating phenomenon, even though we cannot back up all of them with empirical evidence:

Stød is apparently not an obstacle where children's acquisition of their mother tongue is concerned. That is, words with stød enter into a child's lexicon no later than corresponding words without stød; nor do stød alternations (for example from singular to plural) delay children's acquisition of morphology, cf. Kjærbæk and Basbøll (2010: 15, 25).

In connection with the phonetic annotation of a fairly large non-scripted speech corpus, *DanP-4FS* (Grønnun 2009), the transcribers often noted that - although the acoustic manifestation was highly variable, as demonstrated in section 2 above - stød was very nearly always clearly identifiable, and - even more noticeable: it did not seem to be subject to any particular weakening, whether acoustic or perceptual, in less distinct and/or more rapid passages. This is in sharp contradistinction to the manifestation of most segments, of course, which - while still being indisputably identifiable - display a large range of varieties. Thus, for instance, obstruents vary from the most clearly enunciated proto-typical stops and fricatives to the weakest possible approximants, and they may be deleted altogether. Stød is never likewise deleted (the morphological non-stød principles are a different matter. cf. section 4.1.2 above).

Slips-of-the-tongue involving stød are extremely rare. In Nina Grønnun's collection from radio transmissions of hundreds of slips, there are only two involving stød. This is one of them: ... Berlusconi's troubles and scandals ... '... Berlusconi's troubles and scandals ...': *kvaler* was rendered with stød, [kʰvælæ], as it should be, and so was, mistakenly, *skandaler* [skʰændælə], supposedly in a carry-over from *kvaler.* In this respect, stød resembles stress which also only produces very rare slips-of-the-tongue.

In a pilot phonological experiment which, among other tasks, involved syllable reversal (Grønnun 1999), subjects would reverse the segments, but almost consistently leave stress and length in place. Thus, for example, ['kwa:vælɐ] > ['nae:\mo:] (rather than *['na:\mo:]), with adjustment of the short [a]-quality to the appropriate long [æ]-quality. Stress and length appear to be autosegmental, and the prosodic properties of words are presumably stored separately in the mental lexicon of speakers. This is in accordance with Stemberger's (1984) analysis of German and Swedish speech error data. It is also reminiscent of Hombert (1986) who showed that length (and likewise tones) remain in place in syllable reversal experiments. To these experimental findings we might add entirely anecdotal evidence: when a word will not come to mind immediately, we are nevertheless often able to recall its structure in terms of its number of syllables and the location of its stress - another kind of evidence that the word's prosodic frame is represented cognitively separately from its segments.

Now, stød is undoubtedly also a prosodic property. What may we conjecture about its representation in the lexicon? Regrettably, material for a syllable reversal experiment is not so easily construed as in the case of stress and length, because the two syllables to be reversed must both be heavy, and there are not many lexemes which fulfil that condition in Danish. The requirement would be met easily in compound words. We would then have to assume, however, that the compounds are separate, independent lexical entries, each with its integrated, separate prosodic frame. Such an assumption may well be valid if we are dealing with existing and common words in the lexicon but not, of course, if we were to construct nonsense words for the experiment. However, be that as it may, composita will not resolve the issue anyway: When, say, *[lanman]* landmand 'farmer' (literally: 'land man') becomes *[manlan]*, which is our intuition, is that because stød remains in place in the prosodic frame? Or is it because the new word is subjected to a well-established non-stød principle: mono-syllabic first members lose their stød (cf. section 6 below), while *land* in the second position, after reversal, just retains the stød it has in isolation?
6 Stød in new and unexpected contexts

The principles for stød assignment appear to be in the process of change, in the direction of simplification and generality, as indicated by data, mostly from the Danish Radio, Channel 1, collected by Nina Grønnum over the past decade.

We should note first that compounding (as opposed to inflection and derivation) does not generally and in an unambiguously principled manner entail neither deletion nor addition of stød. With two exceptions: (1) Loss of stød may occur in a first member if it is monosyllabic and, in somewhat simplified terms, if this first member is familiar and well-established as such in the language. Thus, for example, sol, solskin ['so:l], ['sølsgen] 'sun,' 'sunshine,' but chef, chefion ['ce:f:], ['ce:fien] 'boss,' 'boss' salary (skin and ion have stød also in isolation). Addition of stød is common in a final member of a compound if it is a polysyllabic verb or verbal derivative. Nor is this a new phenomenon. Hansen (1943) lists numerous examples, predominantly infinitives and verbal adjectives, for example forøgle ['forøgəl] 'pretend,' modstræbende ['modstræbe:ndə] 'reluctant;' gogle 'joke (v) and stræbende 'striving' in isolation are without stød. There is in this suspension of the non-stød principle an analogy to principle (7) above (which as formulated there only accounts for non-compound words).

However, stød in this type of compound is not exceptionless. Hansen (1943) lists a number of instances—less common words in the vocabulary according to him—where stød oscillates; for example dødbringende ['dødbrægende] (literally) ‘death bringing;’ It is our distinct impression that stød in this type of compound—where the final part is a verb or a verbal derivative—is becoming the rule rather than the exception in present-day Danish, cf., for example—from Nina Grønnum’s collection—budskærende, Jesusmænder ['bædskærende], ['je:sus'mændə] (literally) ‘puppyresembling,’ ‘Jesus believing,’ which are definitely new words and— we suspect—actually created by the speaker on the fly. Likewise, among the different classes and subclasses of words in the data, those involving verbs or their derivatives contain by far the largest numbers of items.

Below we shall illustrate four cases where stød is unambiguously unexpected in the standard language and which demonstrate the need for a revision of Basboll’s (2005) model if it is to encompass a norm where such pronunciations have become the rule rather than the exception.

6.1 Simple nouns in the plural

['førmen] former ‘fortunen’ but ['førnung] formune is without stød in the singular in the standard norm.

['amro:p] område ‘areas’ but ['amro:dd] område is without stød in the singular in the standard norm.

(However, although singular formune and område do not happen to occur with stød in Nina Grønnum’s collection, stød would no longer surprise us, given the uninflected lexical items that actually do occur with stød, cf. below.)

This is surprising in light of principle (5), cf. section 4.1.2.1: Productive suffixes have no effect on the stød, and plural ['a:] is productive. If one would argue that perhaps the boundary between this lexical item and the suffix has weakened, then we would be dealing with a penultimate syllable in a (pseudo-) lexical item, and it should have no stød anyway.

6.2 Compound nouns in the plural

['vinnawna] vinnname ‘wine names’ but ['nawna] name alone is without stød;

['su:hyy:sa] syghus ‘sickhouses’ (that is: hospitals) but ['huse] house alone is without stød.
Here is an attempt to account for these unexpected noun plurals: The stems — whether simple or compound — have two things in common:

- they have endings
- they are polysyllabic.

Perhaps principle (7) — which concerns semi-productive suffixes, cf. section 4.1.2.3 — is in the process of being generalized to

(7i) before any syllabic suffix only monosyllabic stems have no stød.

However, matters get worse — or better — according to temperament:

### 6.3 Non-inflected lexical items

- [embe’dæ] embede ‘office (a post)’
- [uhyr’e] uhyre ‘monster’

These syllables with stød are penultimate in the lexical item and they should be stødless. However, the words end in a vowel which is phonetically identical to a semi-productive suffix (infinitive |ə|; in uhyre |ə| fuses with the preceding |r| > [v]) which we have already seen to trigger stød in a preceding polysyllabic stem. So perhaps principle (7) is sneaking in where it does not really belong, that is within a lexical item. Or perhaps it is the generalization we proposed in (7i) which penetrates the lexical item: before any syllabic suffix only monosyllabic stems have no stød.

### 6.4 Non-inflected compound nouns and adjectives

- [vin’gummi] vingummi ‘wine gum’ but gummi alone is without stød;
- [uhl’ja] uhjah ‘ill-will’ but uhj alone is without stød;
- [liwsglæde] liwsglade ‘joie-de-vivre’ but glade alone is without stød;
- [morgenstille] morgenstille (adj) ‘morning quiet’ but stille alone is without stød.

However, vingummi ends in a vowel, [i], which is phonetically identical to a semi-productive derivative suffix (*-ig |i|) which, in accordance with (7) and exemplified in 4.1.2.3 above, induces stød (that is, does not induce non-stød) in polysyllabic stems.

Unlike liwsglade, morgenstille end in schwa, phonetically identical to the semi-productive infinitive suffix which induces stød in polysyllabic stems.

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**What we are witnessing may be a change from a specific morphological parsing, cf. (7), to a mere recognition of morphological complexity which is indiscriminate with regard to the nature of the specific suffix, cf. (7i). From there we move towards a parsing which relies on the identification of certain sounds at the end of the word and their separation from a preceding pseudo-stem, so that:**

(7ii) in any word which phonetically resembles a stem + a syllabic suffix, only monosyllabic stems have no stød.

The net result is that more and more heavy syllables will have stød, and the need to formulate principles for its absence will diminish. Accordingly, one could argue that the driving force behind such a change is the simplification it entails for the speaker against the concomitant loss in morphological specificity. Simultaneously, the revised stød principles make the general function of stød (in the native-like vocabulary) as a signal for heavy syllables even more explicit, to the advantage of the speaker and perhaps also the listener.

### 6.5 Theoretical implications

The changes we have observed do not affect the phonological conditions for stød: it will still only occur in heavy — or bi-moraic — syllables. Lexical specification for stød or non-stød is also largely unaffected. But take the tendencies observed to their logical conclusion — lexical specification apart — then the only heavy syllables without stød we encounter in the native vocabulary will be found in disyllables with initial stress. In that restricted context it is still relevant to parse the word morphologically and identify the suffix. Thus [hu:’sæ] and [hu:sa] still demonstrates a surface contrast between huset ‘the house’ (that is [hu:’s] hus (n)) and housed ‘housed’ (that is [hu:sa] hus (inf) plus the productive participle [ad] with |ə| + |ə| fusing into one |ə|). In any other word structure the distinction between different degrees of productivity in suffixes becomes void. However, the crucial aspect of the non-stød principle is maintained: the segmental string of any word with non-final stress is scanned from the right in order to identify phonological candidates for a putative suffix and it is scanned further left to see whether any syllable(s) precede(s) the penultimate stressed one, in which case the stressed syllable has stød, provided it is heavy.

The productivity of this purported change in the nature of the stød-governing principles can be tested in fairly straightforward production experiments. We intend to address this issue in the future.
The principles governing the presence or absence of stød in heavy syllables may be changing from being expressions of grammatical conditions with a significant distinction between different grammatical categories towards expressing phonological conditions in the word so that only the phonological form of suffixes is relevant, not their grammatical content.

If this is not a passing phenomenon, if it spreads and gains foothold, it will have over-arching consequences for stød and its functions: only in di- 
stød will be truly distinctive and have morphological raison-d’être.

In other contexts it will become predictable from syllable structure and word structure alone and thus independent of the morphological content.

Admittedly, our data are limited and it is too early to do more than conjecture and hypothesize as we have done. We shall have to leave it to phonologists further down the line of generations to complete the picture. Note, however, that whether or not the tendencies towards a change (as 
seen to-day - sociolinguistic implications, placing the speaker in a wider language context (cf. section 1); it will still have un-

Maintained.

function - although less differentiated - as a si

By


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Prosodic allomorphs
in the Estonian declension system

1 Introduction

The paper deals with a particular aspect of Estonian grammar – the interaction of prosody and morphology. It is a well known fact of Estonian morphonology that in some nominal paradigms, case is expressed by the prosodic shape of the word. In this paper, I present a classification of Estonian declension on the basis of the use of prosodic case allomorphs.

Estonian nominal inflection involves fourteen cases in the singular and plural, of which the nominative singular, genitive singular, and partitive singular serve as the basis from which the other cases are derived – usually with case endings appropriate for each case (for a recent overview, cf. Viitso 2003). The nominative, genitive and partitive are sometimes referred to as grammatical cases; the eleven additional cases are considered semantic cases. A considerable number of words also have a twelfth semantic case, the fifteenth case, referred to as the short illative or aditive (Viks 1982), and its relevance will become apparent later in the discussion.

The genitive ends in a vowel, the so-called theme vowel. If the stem already ends in a vowel, there is no additional ending. The partitive can have several forms. If there is a segmental suffix, it is /t/ (for example, pere ‘family’ – peret, puu ‘tree’ – puud). There are also numerous paradigms with a zero ending in the partitive, sometimes called the zero allomorph of the case ending (e.g. elu ‘life’, nominative elu, genitive eli, partitive eli). A problem arises here in defining the function of the final vowel: in the nominative it is part of the word, but in the genitive and partitive it is treated as the stem vowel, in the latter instance being followed by the zero allomorph of the partitive suffix.

There are certain problems with this kind of analysis – the kind that operates with stems and suffixes. The final vowel of eli is part of the lexical identity of the word. If a word ends in a consonant in the nominative case, it acquires a so-called stem vowel in the genitive. If the word already ends in a vowel in the nominative, it keeps the same vowel in the genitive, but here it is either reinterpreted as the stem vowel, or the word acquires a zero allomorph of the genitive ending. Words like eli are identical in the genitive and partitive, but the final vowel in the partitive